Fitness & Weight Loss 2022

Mohammed Alo, D.O.

Board Certified Cardiologist

National Association of Sport Medicine Certified Personal Trainer

Clinical Assistant Professor of Cardiovascular Medicine and Internal Medicine

Midwestern University

Ohio University

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https://instagram.com/dr.alo/

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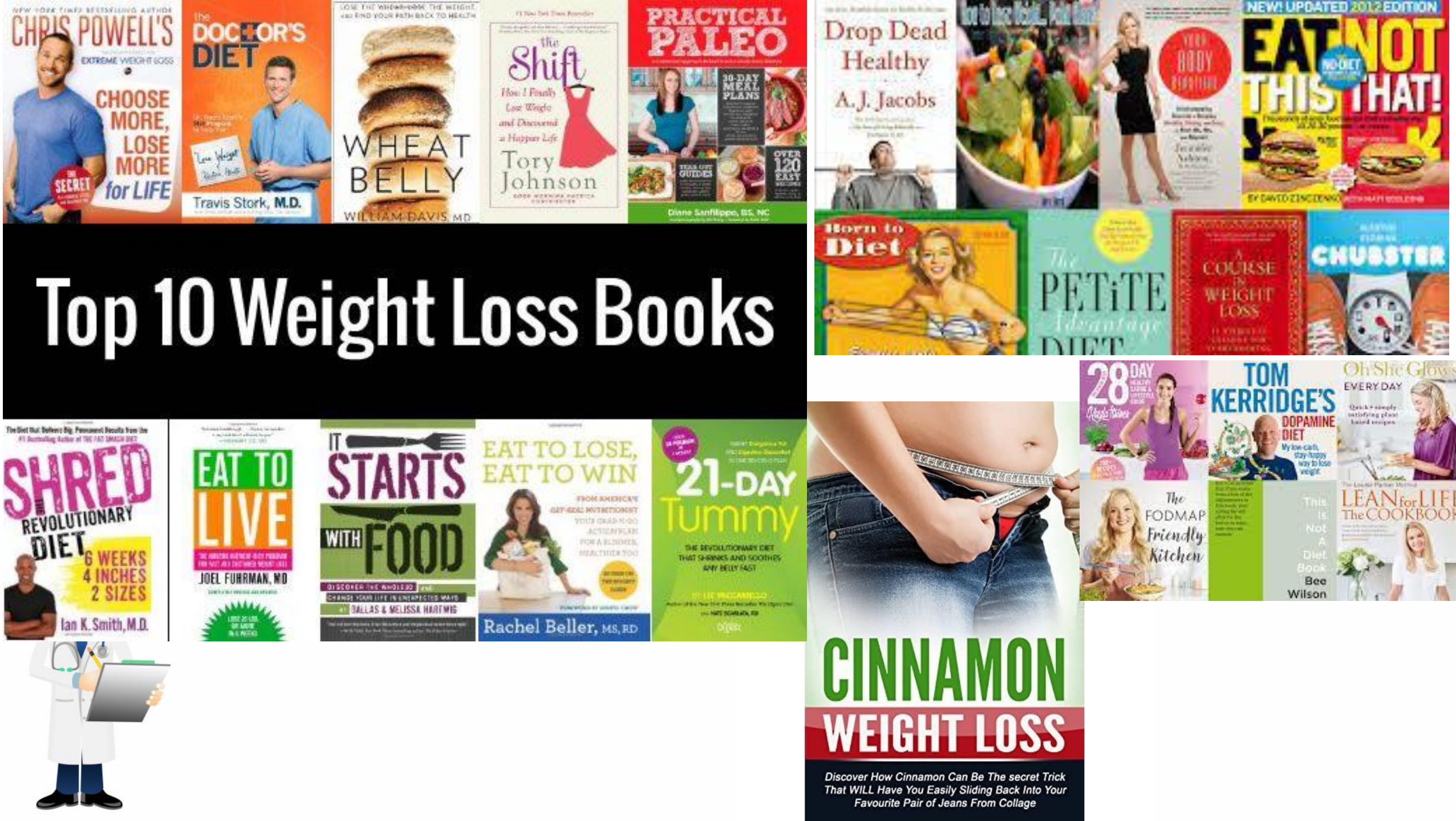
Meet Anurag, Mo, and Melissa


Top 10 Weight Loss Books
CHRIS POWELL'S
EXTREME WEIGHT LOSS
CHOOSE MORE, LOSE MORE for LIFE
THE SECRET
the DOCTOR'S DIET
Travis Stork, M.D.
WHEAT BELLY
WILLIAM DAVIS, MD
the Shift
How I Finally Lost Weight and Discovered a Happier Life
Tory Johnson
PRACTICAL PALEO
30-DAY MEAL PLANS
OVER 120 EASY
Diane Sanfilippo, BS, NC
Drop Dead Healthy
A.J. Jacobs
EAT NOT THIS THAT!
NEW! UPDATED 2012 EDITION
Born to Diet
The PETiTE Advantage DIET
A COURSE in WEIGHT LOSS
CHUBSTER
SHRED the REVOLUTIONARY DIET
6 WEEKS 4 INCHES 2 SIZES
Ian K. Smith, M.D.
EAT TO LIVE
JOEL FUHRMAN, MD
IT STARTS WITH FOOD
EAT TO LOSE, EAT TO WIN
Rachel Beller, MS, RD
21-DAY Tummy
28 DAY
TOM KERRIDGE'S DOPAMINE DIET
Oh She Glows EVERY DAY
The FODMAP Friendly Kitchen
This Is Not A Diet Book
Bee Wilson
LEAN for LIFE The COOKBOOK
CINNAMON
WEIGHT LOSS
Discover How Cinnamon Can Be The secret Trick That WILL Have You Easily Sliding Back Into Your Favourite Pair of Jeans From Collage

My Passion...

AS SEEN ON:

abc CBS FOX DIGITAL JOURNAL Google News USA TODAY NETWORK NBC

MarketWatch Daily Herald Boston Herald US FINANCIAL NEWS TODAY TEXAS HEADLINES LATEST US FINANCIAL NEWS

My Passion...

I had become the most requested speaker at medical conferences, to discuss weight loss, but I could not lose weight! Frustration!

The Weight Loss Doctor Kept Losing to Weight Loss!

Results…

Disclosures

Books

Actual Weight Loss

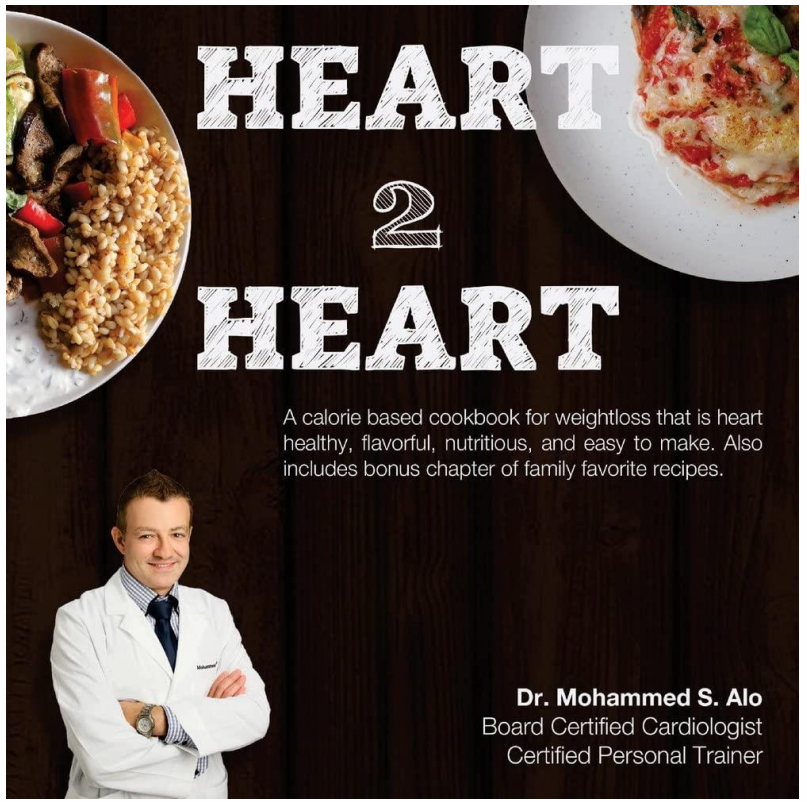
The No Nonsense Weight Loss Plan Without Gimmicks, Diets, Fads, and Restrictions

Lose Weight While Eating the Foods You Love

There's no shortcut to weight loss. Dr. Alo discusses the science behind weight loss and filters out the nonsense. Anyone can lose weight following a simple proven program. Hundreds of patients and clients have lost weight and kept it off. Finally, get off the diet roller coaster!

Mohammed S. Alo, DO

Cardiologist ● Certified Personal Trainer



Objectives

1. Deficiencies in Training
2. Definitions
3. Obesity Scope
4. Solutions
5. Failed Attempts
6. Weight Loss That Works

Questions

- How do you lose weight?
- What does the media/social say about weight loss?
- What do you tell your patients about weight loss?

You Don’t Know!

Review > Am J Med. 2018 Apr;131(4):339-345. doi: 10.1016/j.amjmed.2017.11.036.
Epub 2017 Dec 18.

The Deficit of Nutrition Education of Physicians

Monica Aggarwal [1], Stephen Devries [2], Andrew M Freeman [3], Robert Ostfeld [4], Hanna Gaggin [5], Pam Taub [6], Anne K Rzeszut [7], Kathleen Allen [8], Richard C Conti [9]

Affiliations + expand

PMID: 29269228 DOI: 10.1016/j.amjmed.2017.11.036

Abstract

Globally, death rates from cardiovascular disease are increasing, rising 41% between 1990 and 2013, and are often attributed, at least in part, to poor diet quality. With urbanization, economic development, and mass marketing, global dietary patterns have become more Westernized to include more sugar-sweetened beverages, highly processed foods, animal-based foods, and fewer fruits and vegetables, which has contributed to increasing cardiovascular disease globally. In this paper, we will examine the trends occurring globally in the realm of nutrition and cardiovascular disease prevention and also present new data that international nutrition knowledge amongst cardiovascular disease providers is limited. In turn, this lack of knowledge has resulted in less patient education and counseling, which is having profound effects on cardiovascular disease prevention efforts worldwide.

https://pubmed.ncbi.nlm.nih.gov/29269228/

R I Med J (2013). 2016 Mar 1;99(3):23-5.

Teaching Doctors-in-Training About Nutrition: Where Are We Going in 2016?

Allison L Crawford [1], Karen E Aspry [2]

Affiliations + expand

PMID: 26929967

Abstract

Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of preventable death in the U.S., and its public health and economic burdens are rising. There is substantial evidence that dietary factors significantly reduce ASCVD-related morbidity and mortality, and that Americans, including those with established ASCVD, adhere poorly to cardio-protective diet patterns. Despite this, there continues to be a large gap in nutrition education during medical school and post-graduate training, leaving physicians poorly prepared to counsel patients on diet, nutrition, and related behavior change. The result is a massive missed opportunity to improve cardiovascular disease prevention at the health system level. However, recent calls for change by stakeholder groups, and a surprising new experiential learning model, suggest this may be changing.

https://pubmed.ncbi.nlm.nih.gov/26929967/

Fam Med. 2003 Feb;35(2):105-11.

Nutrition education in family practice residency programs

Darwin Deen [1], Elizabeth Spencer, Kathryn Kolasa

Affiliations + expand

PMID: 12607807

Abstract

Background and objectives: Nutrition is a required part of family practice residency training. Unfortunately, little is known about the quality or effectiveness of this nutrition training. This study evaluated the current status of nutrition training in family practice residency training programs.

Methods: We surveyed 100 randomly selected US family practice residencies about their nutrition education curriculum. Surveys were sent by e-mail, mail, fax, or administered by phone to individuals identified as responsible for nutrition teaching. A response rate of 66% was obtained.

Results: Programs varied greatly in their emphasis on nutrition. Identified barriers were similar across most programs. The presence of at least a part-time faculty member dedicated to nutrition was correlated with perceived effectiveness of nutrition education efforts.

Conclusions: If family physicians are to be prepared to inform their patients regarding nutrition and to make appropriate referrals, improvements in the nutrition curriculum offered in many family practice residency programs will be required. Readers can evaluate their program's nutrition education efforts and see how they compare to our sample. Specific recommendations for potential changes are included.

https://pubmed.ncbi.nlm.nih.gov/12607807/

Circulation

https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.116.023554

FREE ACCESS

RESEARCH ARTICLE

PDF/EPUB

Tools Share

The Future of Cardiovascular Education and Training

David W. Brown, Calum A. MacRae, and Timothy J. Gardner

Originally published 21 Jun 2016 | https://doi.org/10.1161/CIRCULATIONAHA.116.023554 | Circulation. 2016;133:2734–2742

Jump to

Introduction

In this review, we will attempt to envision not just emerging changes in training in each of our specialties, but also some of the general directions in which the field of postgraduate medical education will evolve. Although the formal training programs in our professional areas are at distinctive phases in the transition from a traditional time-limited apprenticeship model to one that is focused on the quantitative assessment of competency, they each share the burdens of adapting to increasingly rapid change in the fundamental knowledge base and in patterns of care delivery. These challenges come at a time when there is increasing uncertainty in reimbursement and job security for clinicians in cardiovascular disease. We have tried to highlight specific developments in the relevant sections, but it is clear that the external and internal pressures in each cardiovascular specialty and our responses to these pressures overlap considerably. By learning from each other and adopting best practices, we will be better able to cope with the inevitable change that professional education promises in the next decade and beyond.

The Future of Training in Pediatric Cardiology

The education and training of physicians in pediatric cardiology continues to evolve with a recent paradigm shift in training from proscriptive time-based or procedural number-based recommendations for training to competency-based objectives. The 2015 training guidelines for Pediatric Cardiology programs were revised by task force members that included representatives from all relevant professional societies (American Academy of Pediatrics, American College of Cardiology, and American Heart Association) and the Society of Pediatric Cardiology Training Program Directors.[1] The 2015 guidelines highlight the paradigm shift toward competency. Although previous guidelines were based on the assumption that competency for given activities, tasks, or procedures would naturally follow from proscriptions of

Not one mention of diet, weight loss, fat, obesity

ANNALS OF FAMILY MEDICINE™

https://www.annfammed.org/content/18/2/169

Discussion | Reflections

What I Wish My Doctor Really Knew: The Voices of Patients With Obesity

Janyce Johnstone, Cherie Herredsberg, Les Lacy, Peg Bayles, Lynn Dierking, Arla Houck, Margaret Kilpatrick, Luanne Kramer, Karen Mason, Carla Mendez, Frank Schrotberger and Christie Befort

The Annals of Family Medicine March 2020, 18 (2) 169-171; DOI: https://doi.org/10.1370/afm.2494

Abstract

Few health care professionals receive comprehensive training in how to effectively help their patients with obesity. Yet patients are often wanting, needing, and looking for help when they go to the doctor. We, as a group of patients with obesity, share our common experiences and needs when going to the doctor from a place of honesty and hope, with the assumption that clinicians want to know what their patients really think and feel. Our "wish list" for a treatment plan may represent an ideal, but our hope is that our language will speak to clinicians about how they can help their patients manage their obesity.

Key words

obesity management | competencies | patient voice

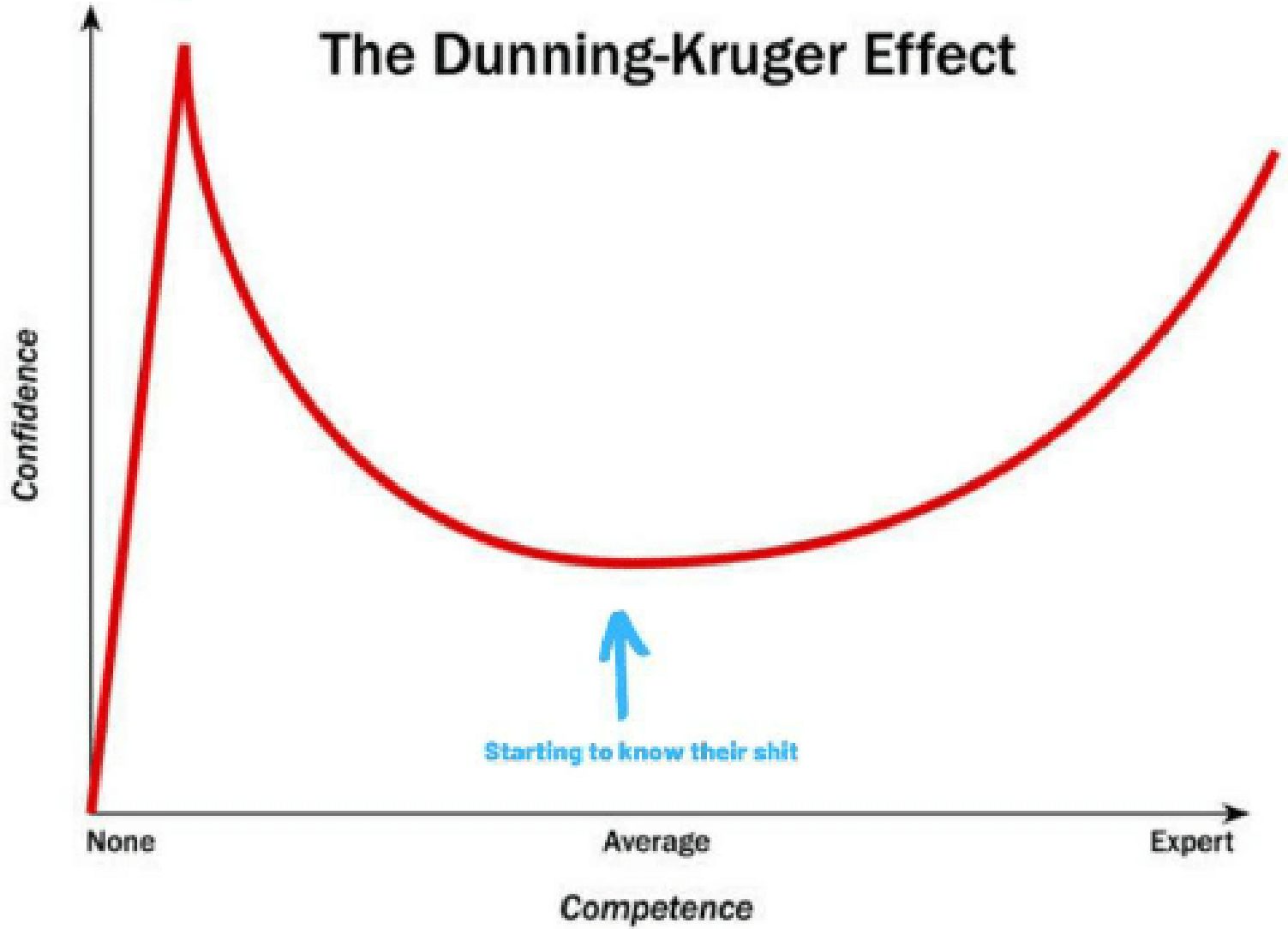
Obese—what a cruel word. "O-be-si-ty"—the condition of being grossly fat. A medical diagnosis to describe us. We know it is a medical term, but it can still feel like a cruel word. It's the stigma, the sense that it's a character defect.

We are a group of patients with obesity. Among us are men and women in our early 40s to late 70s, a mix of professionals (including teachers, nurses, dental assistant, farmers, homemakers). But we are individuals with one common denominator: we struggle when it comes to weight management. It has been a lifelong struggle for many of us. Several of us are cancer survivors, and more than a few of us face health complications related to the "condition." We are fighters when it comes to our

Healthy Diet ?

- Diet Culture- Toxic
- Diet Trauma
- Food Freedom
- Extreme Dieting- anorexia/bulemia
- Rebuilding Good Relationship with Food
- Food Morality- good vs bad
- Restriction and Rigidity
- Using Food/Exercise as Reward/Punishment

Watched one NETFLIX documentary



Proper Weight Loss

- You will be losing the same 30 pounds for the next 30 years

Secret to Weight Loss

Weight Loss
vs
Fat Loss


KENMORE
TITAN

Scope

- 84% of adults overweight or obese
- 26% of adults obese
- 16.6% of children 2-19 years of age are overweight (5.6% Obese)
- 12% of children 2-5 years of age are overweight

Obesity Among Pysicians

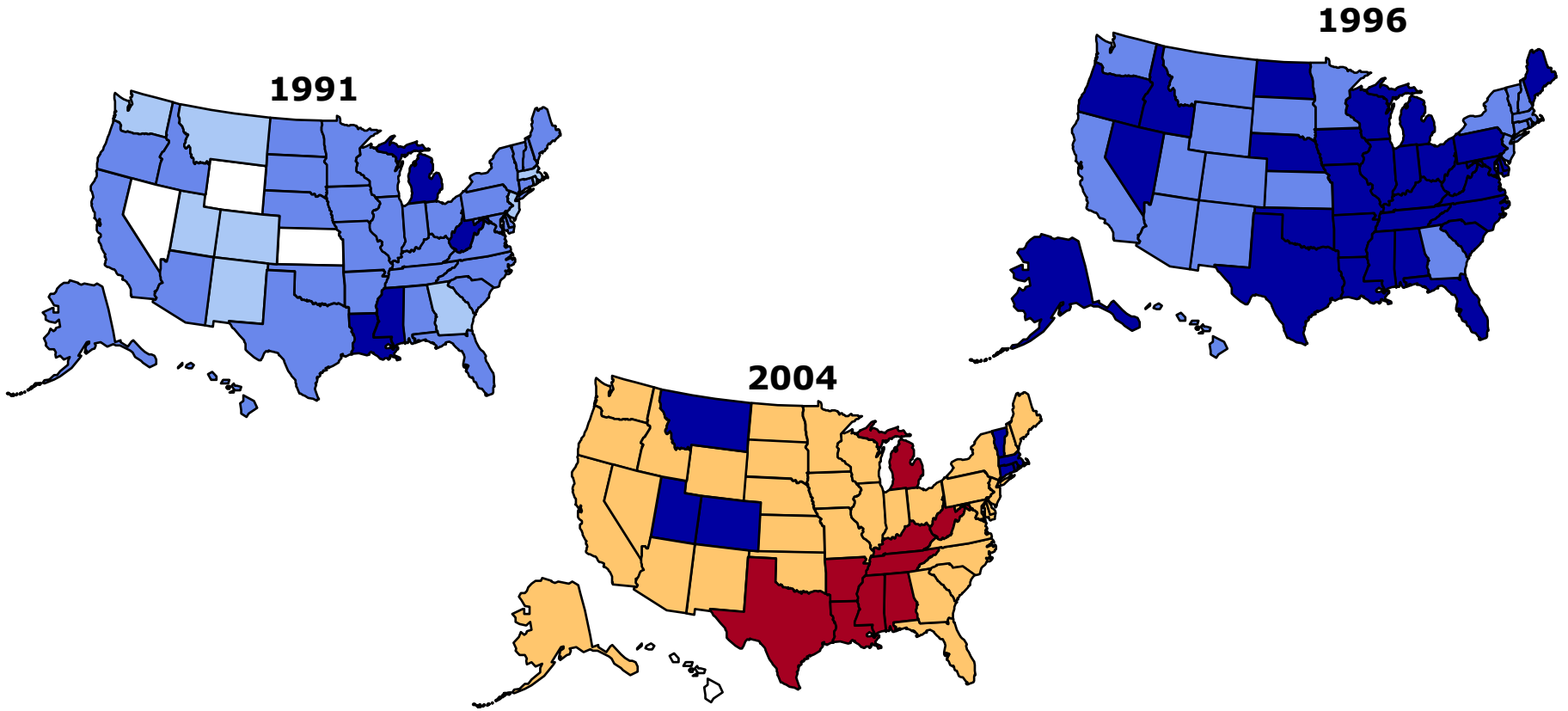
- According to the 2007 Physicians Health Study, 40% of the 19,000 doctors were overweight and 23% were obese.

http://online.wsj.com/articles/SB10001424052748704113504575264364125574500

Obesity Trends* Among U.S. Adults

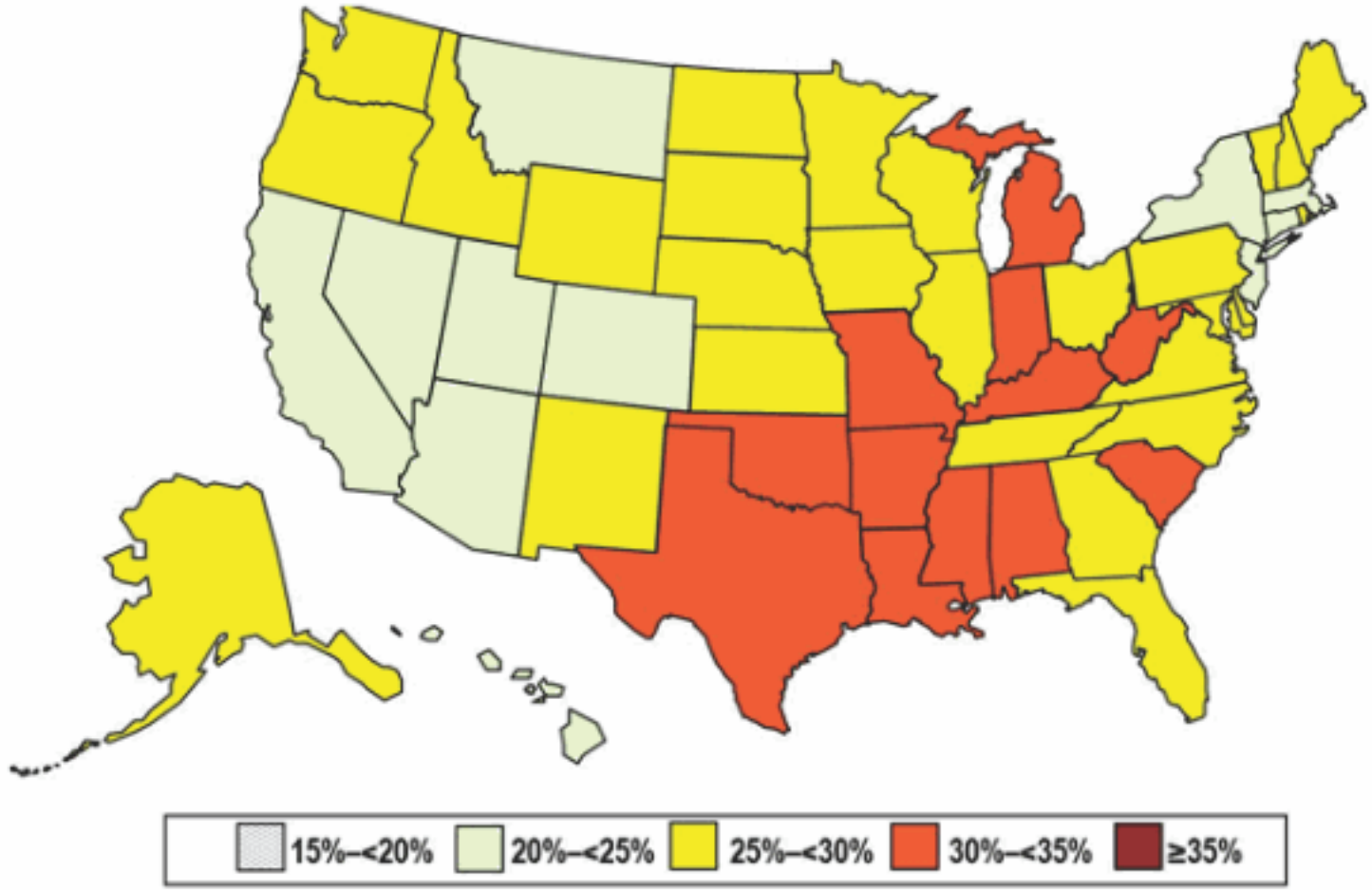
BRFSS, 1991, 1996, 2004

(*BMI ≥30, or about 30 lbs overweight for 5'4" person)



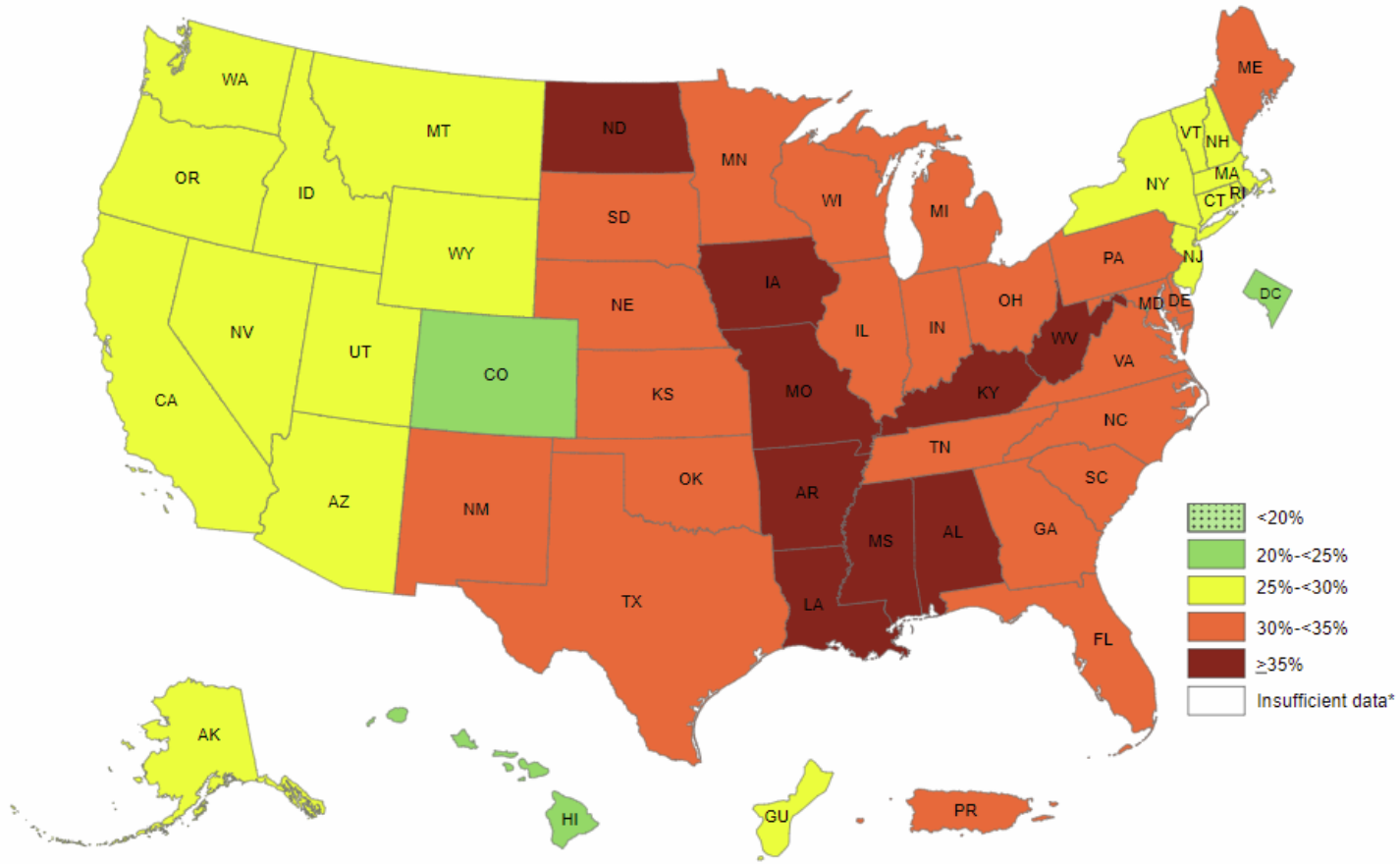
Prevalence of Self-Reported Obesity Among U.S. Adults

BRFSS, 2011



Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2018

†Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.



Prevalence of Self-Reported Obesity Among Non-Hispanic Black Adults by State and Territory, BRFSS, 2016-2018

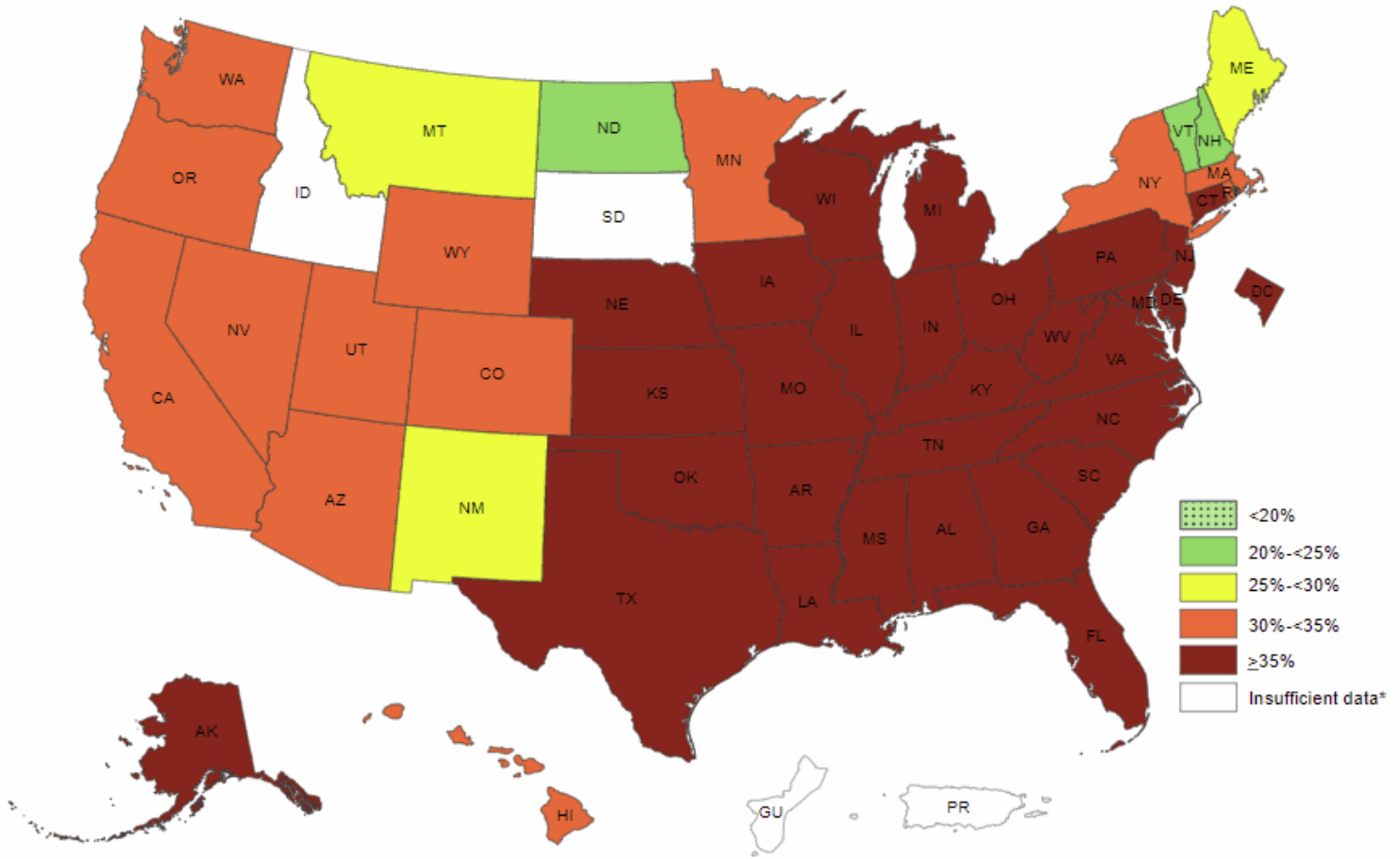
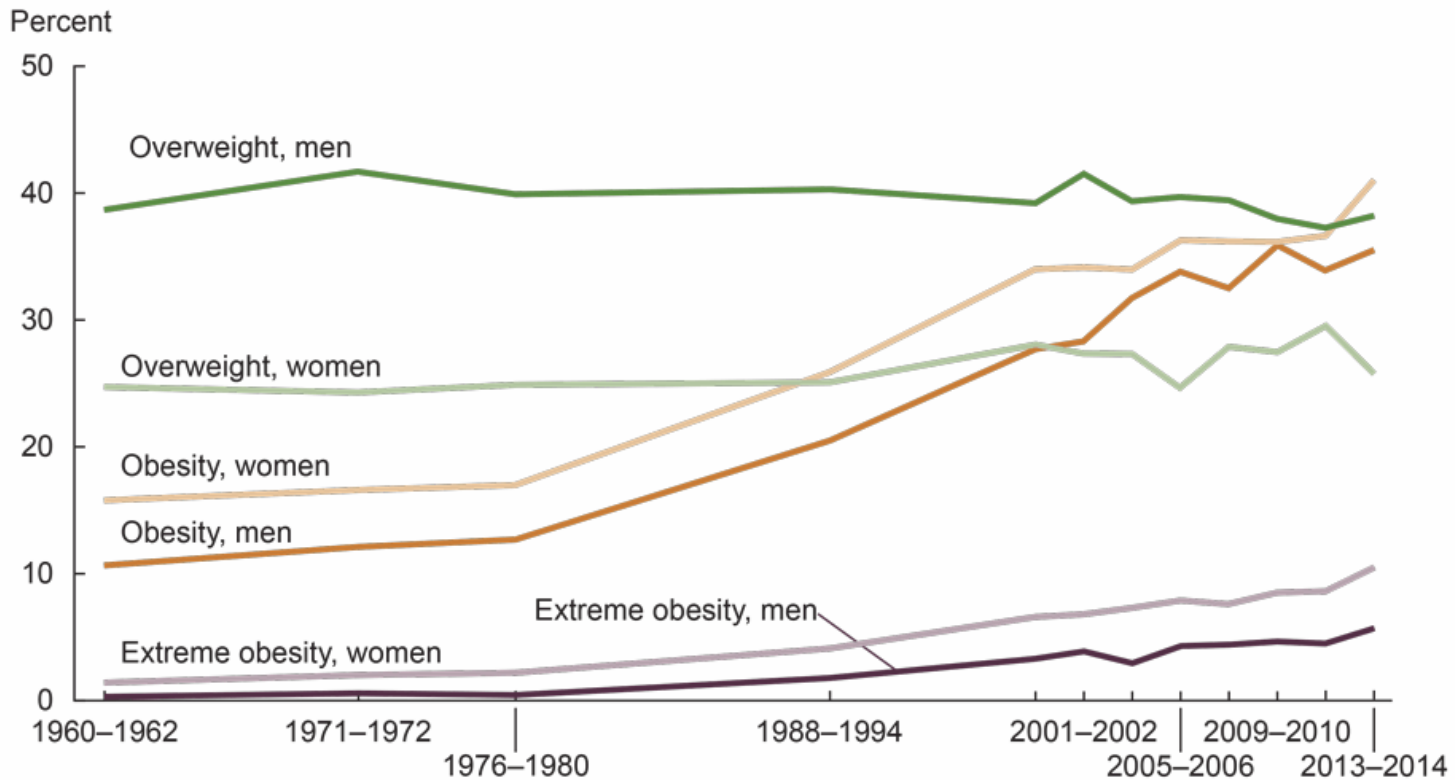


Figure. Trends in adult overweight, obesity, and extreme obesity among men and women aged 20–74: United States, 1960–1962 through 2013–2014

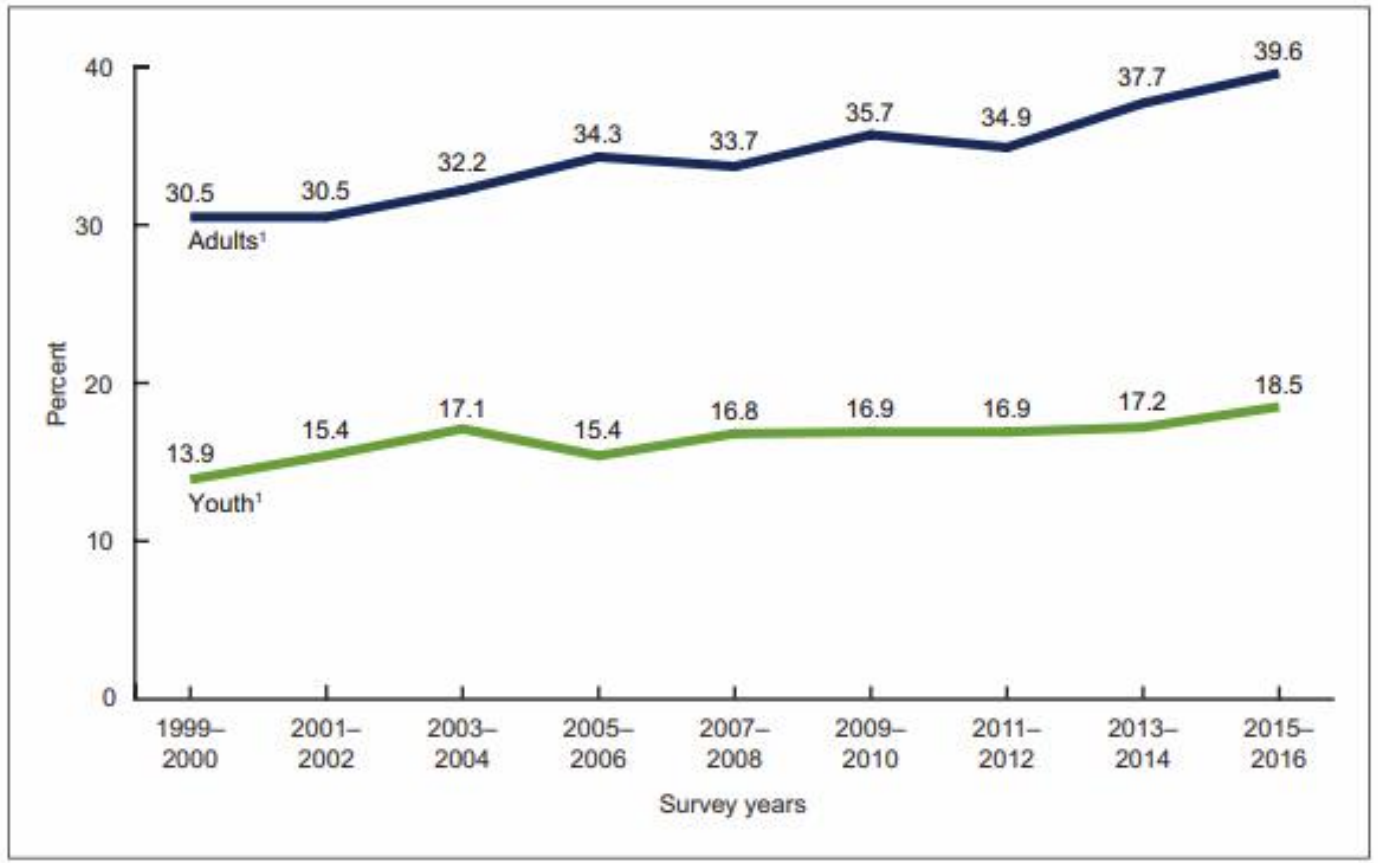


NOTES: Age-adjusted by the direct method to the year 2000 U.S. Census Bureau estimates using age groups 20–39, 40–59, and 60–74. Overweight is body mass index (BMI) of 25 kg/m^2 or greater but less than 30 kg/m^2; obesity is BMI greater than or equal to 30; and extreme obesity is BMI greater than or equal to 40. Pregnant females were excluded from the analysis.
SOURCES: NCHS, National Health Examination Survey and National Health and Nutrition Examination Surveys.

What are the trends in adult and childhood obesity?

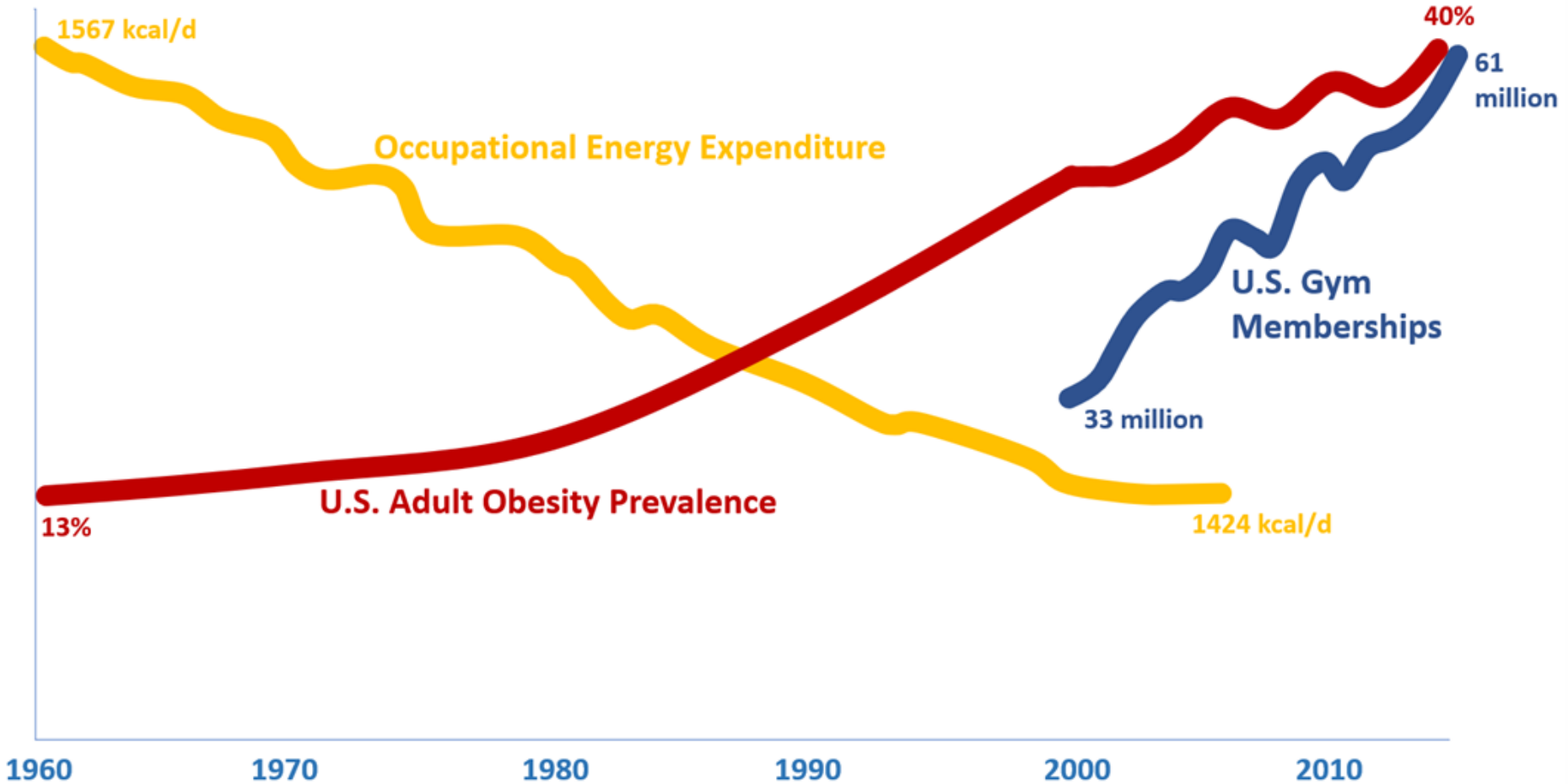
From 1999–2000 through 2015–2016, a significantly increasing trend in obesity was observed in both adults and youth. The observed change in prevalence between 2013–2014 and 2015–2016, however, was not significant among both adults and youth (Figure 5).

Figure 5. Trends in obesity prevalence among adults aged 20 and over (age adjusted) and youth aged 2–19 years: United States, 1999–2000 through 2015–2016



[1]Significant increasing linear trend from 1999–2000 through 2015–2016.
NOTES: All estimates for adults are age adjusted by the direct method to the 2000 U.S. census population using the age groups 20–39, 40–59, and 60 and over.
Access data table for Figure 5 at: https://www.cdc.gov/nchs/data/databriefs/db288_table.pdf#5.
SOURCE: NCHS, National Health and Nutrition Examination Survey, 1999–2016.

Trendlines: Obesity, Calories Burned at Work, and Gym Memberships



Sources: NHANES, Church et al 2011, IHRSA

Gym and Health Club Membership in the U.S., 2005-2015

U.S.News & World Report

Andrew Soergel for USN&WR

Data: International Health, Racquet and Sportclub Association

In 1980, 46% of US adults age 20 and older were overweight or obese; by 1999, the number had increased to 60%. This dramatic increase has coincided with several trends:

• Higher energy intake from larger portion at home and at restaurants ("super-sizing")

• Greater consumption of high-fat foods

• Widespread availability of low-cost, good-tasting, energy-dense foods

• Decreased physical activity at work, at home, and during leisure time.

At any given time, 44% of women and 29% of men are dieting

Americans spend $50 billion a year on weight-loss products, programs, and pills

Costs of obesity?

Q: What is the cost of obesity?

A: Total cost: $147 billion , Direct cost: $65 billion,* Indirect cost: $56 billion (comparable to the economic costs of cigarette smoking)

Q: What is the cost of heart disease related to overweight and obesity?

A: Direct cost: $8.8 billion (17 percent of the total direct cost of heart disease, independent of stroke)

Q: What is the cost of type 2 diabetes related to overweight and obesity?

A: Total cost: $98 billion (in 2001)

Q: What is the cost of osteoarthritis related to overweight and obesity?

A: Total cost: $21.2 billion, Direct cost: $5.3 billion, Indirect cost: $15.9 billion

Q: What is the cost of hypertension (high blood pressure) related to overweight and obesity?

A: Direct cost: $4.1 billion (17 percent of the total cost of hypertension)

Q: What is the cost of gallbladder disease related to overweight and obesity?

A: Total cost: $3.4 billion, Direct cost: $3.2 billion, Indirect cost: $187 million

More costs…

Q: What is the cost of cancer related to overweight and obesity?

- Breast cancer: Total cost: $2.9 billion, Direct cost: $1.1 billion, Indirect cost: $1.8 billion
- Endometrial cancer: Total cost: $933 million, Direct cost: $310 million, Indirect cost: $623 million
- Colon cancer: Total cost: $3.5 billion, Direct cost: $1.3 billion, Indirect cost: $2.2 billion

Q: What is the cost of lost productivity related to obesity?

- The cost of lost productivity related to obesity (BMI $\geq$ 30) among Americans ages 17–64 is $3.9 billion. This value considers the following annual numbers (for 1994):
- Workdays lost related to obesity: 39.3 million
- Physician office visits related to obesity: 62.7 million
- Restricted activity days related to obesity: 239.0 million
- Bed-days related to obesity: 89.5 million

Medical Complications of Obesity

Pulmonary disease
abnormal function
obstructive sleep apnea
hypoventilation syndrome

Nonalcoholic fatty liver disease
steatosis
steatohepatitis
cirrhosis

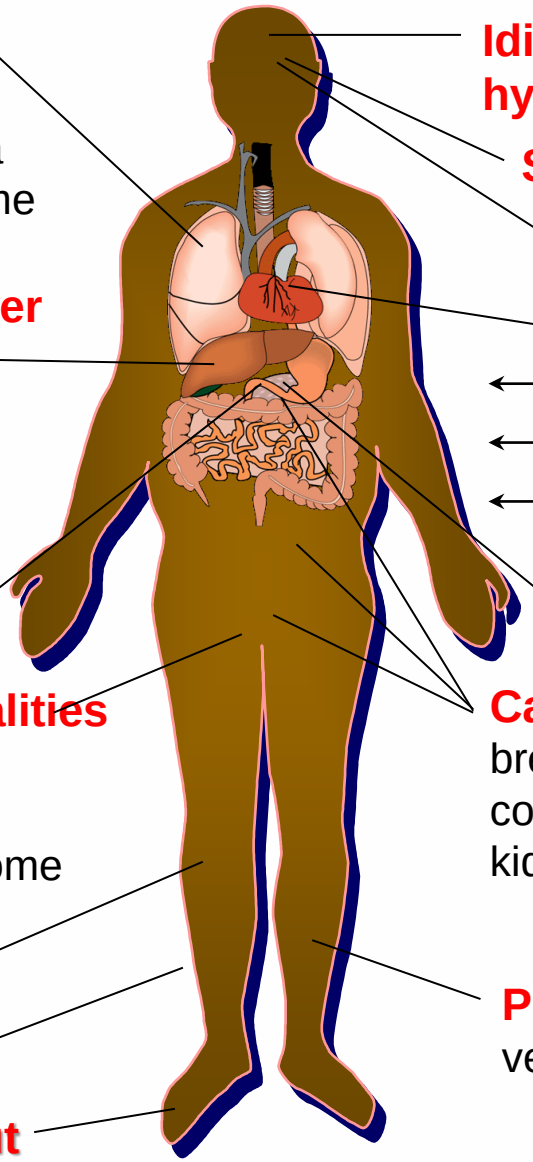
Gall bladder disease

Gynecologic abnormalities
abnormal menses
infertility
polycystic ovarian syndrome

Osteoarthritis

Skin

Gout



Idiopathic intracranial hypertension

Stroke

Cataracts

Coronary heart disease

Diabetes

Dyslipidemia

Hypertension

Severe pancreatitis

Cancer
breast, uterus, cervix
colon, esophagus, pancreas
kidney, prostate

Phlebitis
venous stasis

Complications no one talks about

- Not fitting in CT scanner or MRI machine
- Abdominal surgery and healing, can’t close back up
- Medical emergencies- Can they carry you out?
- Difficulty dosing medications
- Operating tables not capable
- Not fitting in airplane
- Stress testing equipment can’t handle more weight
- Two day tests instead of one
- Inability to draw blood
- Can’t fit in certain masks
- Can’t be intubated properly
- Not being able to dose medications properly because they were never tested in such large individuals with large volumes of distribution (we don’t know if it’s even working for you)
- Need specialized heavy equipment to turn patients in hospital beds
- Immobility and bed sores

Diets Failing

50-70% weight regain rates in year 1

85% within 2 years

95% in 3 years

33-66% will add back more wight than they lost

But 5% of people lose weight and keep it off past 5 years!

Studies

1 (2015, November 4). Effects on cardiovascular risk factors of weight losses ... - NCBI - NIH. Retrieved August 30, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4987606/

2 (2014, February 18). The importance of weight management in type 2 diabetes ... - NCBI - NIH. Retrieved August 30, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4238418/

3 (2017, September 6). Intentional weight loss and cancer risk - NCBI - NIH. Retrieved August 30, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5669836/

4 (2017, November 15). Effects of weight loss interventions for adults who are ... - NCBI - NIH. Retrieved August 30, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5682593/

5 "Comparison of the Atkins, Ornish, Weight Watchers, and ... - NCBI - NIH." 5 Jan. 2005, https://www.ncbi.nlm.nih.gov/pubmed/15632335 Accessed 4 Sep. 2018.

6 "Effects of Low-Carbohydrate Diets Versus Low-Fat Diets on Metabolic ...." https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3530364/ . Accessed 4 Sep. 2018.

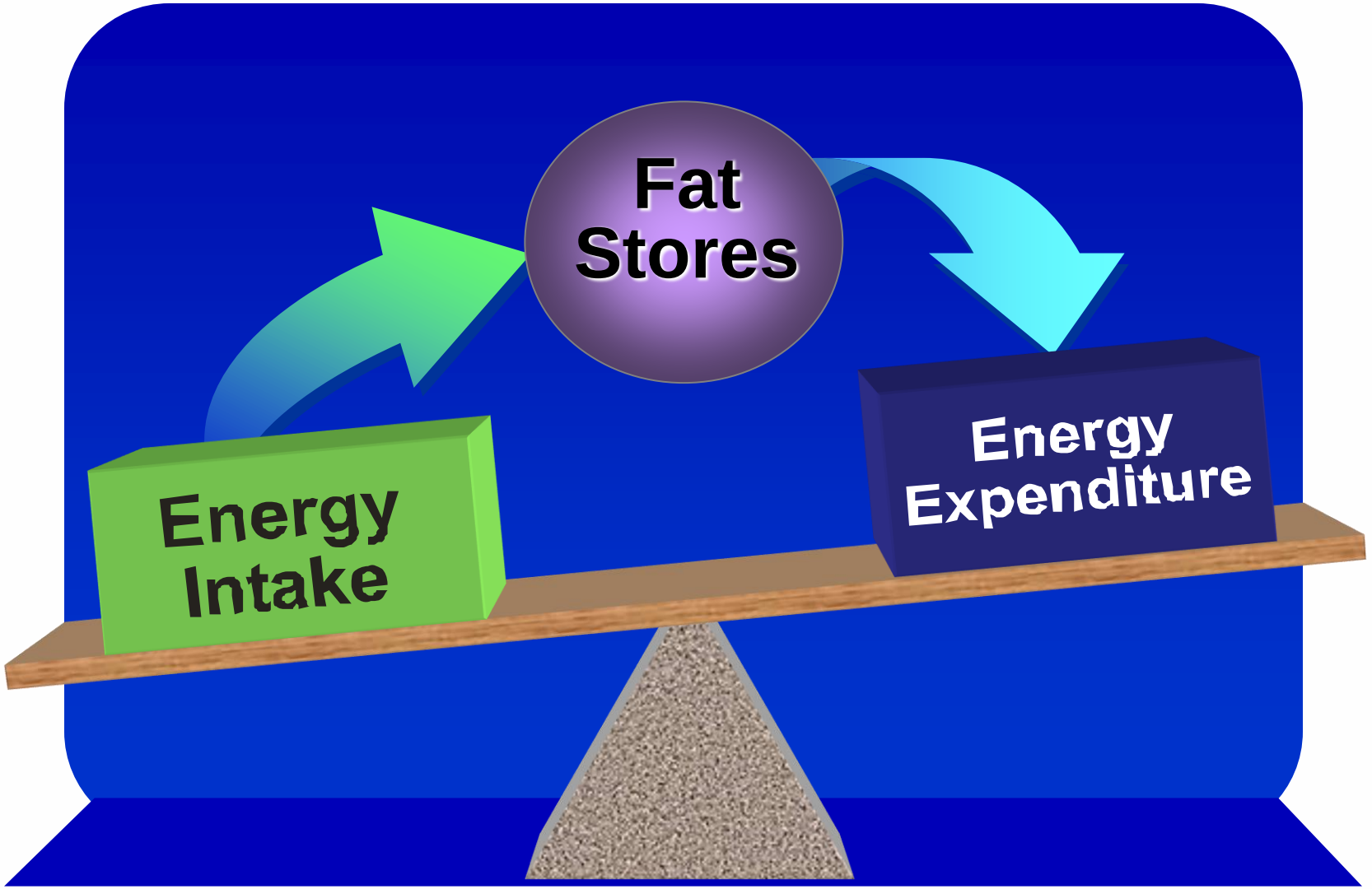
7 "The effects of low-fat, high-carbohydrate diets on plasma lipoproteins ...." https://www.ncbi.nlm.nih.gov/pubmed/16255999 . Accessed 4 Sep. 2018.

8 (n.d.). The BROAD study: A randomised controlled trial using a ... - NCBI - NIH. Retrieved September 4, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5380896/

9 "Comparison of the Atkins, Ornish, Weight Watchers, and ... - NCBI - NIH." 5 Jan. 2005, https://www.ncbi.nlm.nih.gov/pubmed/15632335 . Accessed 4 Sep. 2018.

10 "Long-Term Effects of 4 Popular Diets on Weight Loss and ...." https://www.ahajournals.org/doi/abs/10.1161/circoutcomes.113.000723 . Accessed 4 Sep. 2018.

Simple?



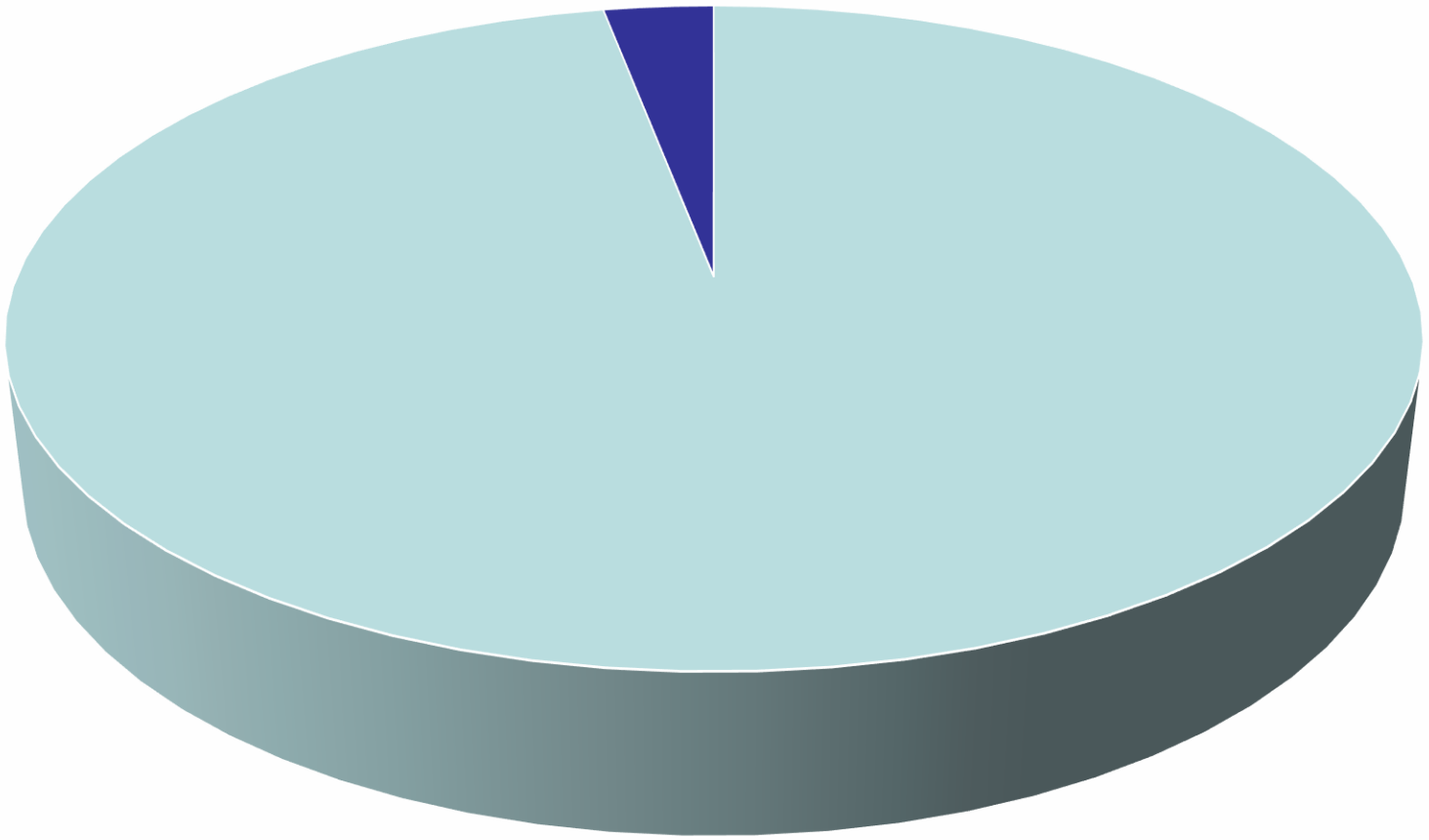
Metabolic Ward Studies

- Participants locked into a ward
- Not allowed to leave (like jail)
- Doubly labelled water
- Intake and output accurately measured
- Can quantify BMR, CICO, TDEE, NEAT, EAT

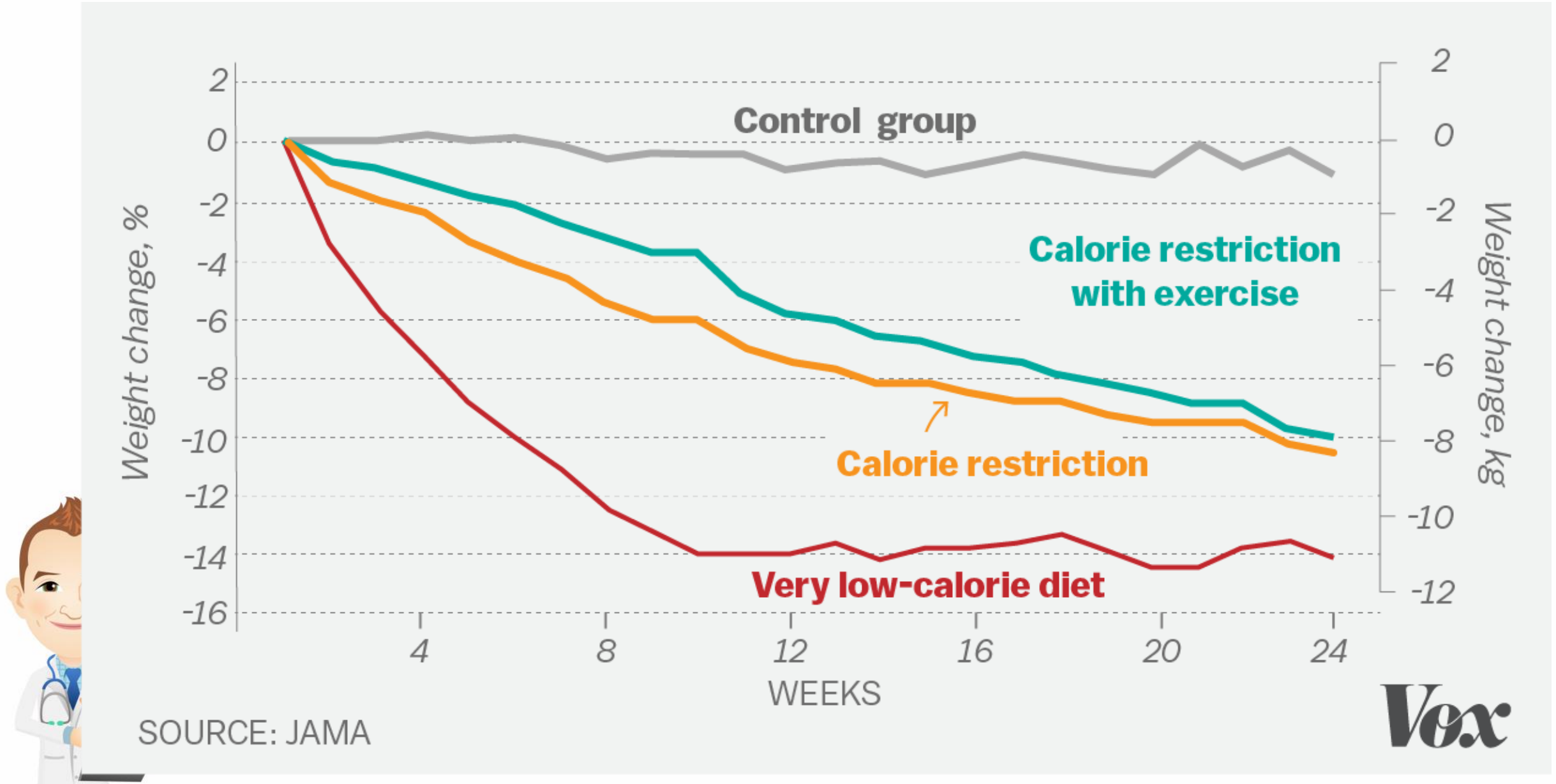
The **doubly labelled water** (DLW) technique measures total carbon dioxide production by observing the differential rates of elimination of a bolus dose of the stable isotope tracers, ^{2}H (deuterium) and ^{18}O. Combined with an estimate of the respiratory quotient, this yields an estimate of total energy expenditure.

Diet or Exercise?

What is more important in determining your body composition?



97% Diet **3% Exercise**


Weight change, %
2
0
-2
-4
-6
-8
-10
-12
-14
-16
Weight change, kg
2
0
-2
-4
-6
-8
-10
-12
Control group
Calorie restriction with exercise
Calorie restriction
Very low-calorie diet
4
8
12
16
20
24
WEEKS
SOURCE: JAMA
Vox

Exercise Modalities

1. Endurance- Aerobic endurance training (Cardio)
2. Strength- Resistance training (Weights)
3. Balance
4. Flexibility

Effects of aerobic versus resistance exercise without caloric restriction on abdominal fat, intrahepatic lipid, and insulin sensitivity in obese adolescent boys: a randomized, controlled trial. Diabetes, 61(11), 2787-2795

Lee, S., Bacha, F., Hannon, T., Kuk, J. L., Boesch, C., & Arslanian, S. (2012).

A 3-month randomized, controlled study **[4]** recruited 43 overweight or obese adolescent boys (12-18 years old) who were physically inactive which was quantified as no participation in structured physical activity over the previous 3 months except school physical education classes. All subjects were asked to follow a weight maintenance diet during the 3-month intervention period to determine the effects of exercise without caloric restriction. Subjects were split into three groups: aerobic exercise, resistance training, or control. The aerobic exercise program consisted of treadmill, elliptical, or stationary bike sessions three times per week for 60 minutes per session at approximately 50% of VO2peak and increased to 60 minutes at 60-75% of VO2peak by week two. The resistance training program consisted of ten exercises such as leg press, chest press, latissimus pull downs, seated row, among others. The week 1-4 protocol was to perform 1-2 sets of 8-12 repetitions at 60% of baseline. During weeks 4-12, subjects performed two sets of 8-12 repetitions to fatigue.

While these are not the most challenging training protocols known to mankind, keep in mind that these are adolescent boys who have puberty to thank for the plethora of androgenic hormones pumping through their veins for the first time and they are also novice exercisers which will allow them to make faster progress than any other population. These two factors, adolescent in age and novice exercisers, should create a perfect cocktail where exercise could make a huge impact on body composition.

However, the data showed that after three months, exercise had very little impact on weight loss. (Remember, 1 lb.= 2.2 kgs.)

- Control group gained 2.6 + 1.0 kg body weight
- Aerobic exercise group lost 0.04 + 0.8 kg body weight
- Resistance training group lost 0.6 + 0.8 kg body weight

Effects of aerobic or combined aerobic resistance exercise on body composition in overweight and obese adults: gender differences. A randomized intervention study. Eur J Phys Rehabil Med, 49(1), 1-11

Sanal, E., Ardic, F., & Kirac, S. (2013)

Another study recruited 65 adults who completed an exercise protocol in which they were randomly assigned to one of two exercise groups: aerobic exercise or combined aerobic and resistance exercise. Aerobic exercise progressed from 15 minutes three times per week to 30-45 minutes five days per week over the course of 12 weeks. The combined aerobic and resistance exercise protocol consisted of the same aerobic exercise in addition to a twice per week strength training regimen which consisted of six compound strength training exercises designed to work large muscle groups for up to 3-6 sets and 10 repetitions beginning at 50% 1RM the first four weeks and transitioning to 2-3 sets and 10 repetitions at 75-80% 1RM.

At the conclusion of 12 weeks, the aerobic group lost 3.7 kgs body weight and the aerobic + resistance lost 3.8 kgs body weight, which although statistically significant, it is less than 9 lbs.

Effects of a 16-month randomized controlled exercise trial on body weight and composition in young, overweight men and women: the Midwest Exercise Trial. Archives of internal medicine, 163(11), 1343-1350

Donnelly, J. E., Hill, J. O., Jacobsen, D. J., Potteiger, J., Sullivan, D. K., Johnson, S. L., … & Sharp, T. (2003)

A 16-month study **[6]** with 74 participants aged 17-35 years were assigned to either a control group or exercise group. All participants were previously sedentary and did not expend more than 500 calories on physical activity per week. The exercise was primarily done on a treadmill, progressing from 20 minutes at baseline to 45 minutes at 6 months. The exercise intensity progressed from 60% heart rate reserve at baseline to 75% at 6 months.

Participants were required to expend 400 calories per exercise session and approximately 2000 calories per week, which was achieved throughout the course of the study. Energy intake was ad libitum and was measured at baseline and 5 other time points over the 16 months.

At the conclusion of the study, the men in the exercise group had only lost 5.2 kg body weight while the women lost only 0.4 kg body weight.

Meta-analysis: effect of exercise, with or without dieting, on the body composition of overweight subjects. European journal of clinical nutrition, 49(1), 1-10.

Garrow, J. S., & Summerbell, C. D. (1995)

A meta-analysis found the mean weight loss of men who completed 30 weeks of exercise was a measly 2.6 kg. Women compared similarly, on average losing 3.0 kg over the course of 14 weeks.

Garrow, J. S., & Summerbell, C. D. (1995). Meta-analysis: effect of exercise, with or without dieting, on the body composition of overweight subjects. European journal of clinical nutrition, 49(1), 1-10.

Am J Clin Nutr. 2014 Jan;99(1):14-23. doi: 10.3945/ajcn.113.070052. Epub 2013 Oct 30.

Effects of anti-obesity drugs, diet, and exercise on weight-loss maintenance after a very-low-calorie diet or low-calorie diet: a systematic review and meta-analysis of randomized controlled trials.

Johansson K[1], Neovius M, Hemmingsson E.

Author information

Abstract

BACKGROUND: Weight-loss maintenance remains a major challenge in obesity treatment.

OBJECTIVE: The objective was to evaluate the effects of anti-obesity drugs, diet, or exercise on weight-loss maintenance after an initial very-low-calorie diet (VLCD)/low-calorie diet (LCD) period (<1000 kcal/d).

DESIGN: We conducted a systematic review by using MEDLINE, the Cochrane Controlled Trial Register, and EMBASE from January 1981 to February 2013. We included randomized controlled trials that evaluated weight-loss maintenance strategies after a VLCD/LCD period. Two authors performed independent data extraction by using a predefined data template. All pooled analyses were based on random-effects models.

RESULTS: Twenty studies with a total of 27 intervention arms and 3017 participants were included with the following treatment categories: anti-obesity drugs (3 arms; n = 658), meal replacements (4 arms; n = 322), high-protein diets (6 arms; n = 865), dietary supplements (6 arms; n = 261), other diets (3 arms; n = 564), and exercise (5 arms; n = 347). During the VLCD/LCD period, the pooled mean weight change was -12.3 kg (median duration: 8 wk; range 3-16 wk). Compared with controls, anti-obesity drugs improved weight-loss maintenance by 3.5 kg [95% CI: 1.5, 5.5 kg; median duration: 18 mo (12-36 mo)], meal replacements by 3.9 kg [95% CI: 2.8, 5.0 kg; median duration: 12 mo (10-26 mo)], and high-protein diets by 1.5 kg [95% CI: 0.8, 2.1 kg; median duration: 5 mo (3-12 mo)]. Exercise [0.8 kg; 95% CI: -1.2, 2.8 kg; median duration: 10 mo (6-12 mo)] and dietary supplements [0.0 kg; 95% CI: -1.4, 1.4 kg; median duration: 3 mo (3-14 mo)] did not significantly improve weight-loss maintenance compared with control.

CONCLUSION: Anti-obesity drugs, meal replacements, and high-protein diets were associated with improved weight-loss maintenance after a VLCD/LCD period, whereas no significant improvements were seen for dietary supplements and exercise.

PMID: 24172297 [PubMed - indexed for MEDLINE] PMCID: PMC3862452

- Exercise helps you not gain weight back that you have already lost

Am J Physiol Regul Integr Comp Physiol. 2009 Sep;297(3):R793-802. doi: 10.1152/ajpregu.00192.2009. Epub 2009 Jul 8.

Regular exercise attenuates the metabolic drive to regain weight after long-term weight loss.

MacLean PS[1], Higgins JA, Wyatt HR, Melanson EL, Johnson GC, Jackman MR, Giles ED, Brown IE, Hill JO.

Author information

Abstract

Weight loss is accompanied by several metabolic adaptations that work together to promote rapid, efficient regain. We employed a rodent model of regain to examine the effects of a regular bout of treadmill exercise on these adaptations. Obesity was induced in obesity-prone rats with 16 wk of high-fat feeding and limited physical activity. Obese rats were then weight reduced (approximately 14% of body wt) with a calorie-restricted, low-fat diet and maintained at that reduced weight for 8 wk by providing limited provisions of the diet with (EX) or without (SED) a daily bout of treadmill exercise (15 m/min, 30 min/day, 6 days/wk). Weight regain, energy balance, fuel utilization, adipocyte cellularity, and humoral signals of adiposity were monitored during eight subsequent weeks of ad libitum feeding while the rats maintained their respective regimens of physical activity. Regular exercise decreased the rate of regain early in relapse and lowered the defended body weight. During weight maintenance, regular exercise reduced the biological drive to eat so that it came closer to matching the suppressed level of energy expenditure. The diurnal extremes in fuel preference observed in weight-reduced rats were blunted, since exercise promoted the oxidation of fat during periods of feeding (dark cycle) and promoted the oxidation of carbohydrate (CHO) later in the day during periods of deprivation (light cycle) . At the end of relapse, exercise reestablished the homeostatic steady state between intake and expenditure to defend a lower body weight. Compared with SED rats, relapsed EX rats exhibited a reduced turnover of energy, a lower 24-h oxidation of CHO, fewer adipocytes in abdominal fat pads, and peripheral signals that overestimated their adiposity. These observations indicate that regimented exercise altered several metabolic adaptations to weight reduction in a manner that would coordinately attenuate the propensity to regain lost weight.

PMID: 19587114 [PubMed - indexed for MEDLINE] PMCID: PMC2739786 **Free PMC Article**

Br J Sports Med doi:10.1136/bjsm.2009.065557

Original article

Beneficial effects of exercise: shifting the focus from body weight to other markers of health

Neil King[1,*], **Mark Hopkins**[2], **Phillipa Caudwell**[3], **James Stubbs**[4], **John Blundell**[3]

+ Author Affiliations

Correspondence to: neil king, Queensland University of Technology, IHBI, MUsk Av, Kelvin Grove, Brisbane, 4059, Australia; n.king@qut.edu.au

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Abstract

Background: Exercise is widely promoted as a method of weight management, whilst the other health benefits are often ignored. The purpose of this study was to examine whether exercise-induced improvements in health are influenced by changes in body weight.

Methods: Fifty-eight sedentary overweight/obese men and women (BMI 31.8 ±4.5kg/m2) participated in a 12 week supervised aerobic exercise intervention (70% heart rate max, 5 times a week, 500kcal per session). Body composition, anthropometric parameters, aerobic capacity, blood pressure and acute psychological response to exercise were measured at weeks 0 and 12.

Results: Mean reduction in body weight was -3.3 ±3.63kg (P<0.01). However, 26 of the 58 participants failed to attain the predicted weight loss estimated from individuals' exercise-induced energy expenditure. Their mean weight loss was only -0.9 ±1.8kg (P<0.01). Despite attaining lower than predicted weight reduction, these individuals experienced significant increases in aerobic capacity (6.3 ±6.0ml.kg-1.min-1; P<0.01), decreased systolic (-6.00 ±11.5mmHg; P<0.05) and diastolic blood pressure (-3.9 ±5.8mmHg; P<0.01), waist circumference (-3.7 ±2.7cm; P<0.01) and resting heart rate (-4.8±8.9bpm, p<0.001). In addition, these individuals experienced an acute exercise-induced increase in positive mood.

Conclusions: These data demonstrate that significant and meaningful health benefits can be achieved even in the presence of lower than expected exercise-induced weight loss. Less successful reduction in body weight does not undermine the beneficial effects of aerobic exercise. From a public health perspective, exercise should be encouraged and the emphasis on weight loss reduced.

Focus on other markers of health, no just weight loss

J Acad Nutr Diet. 2014 Oct;114(10):1557-68. doi: 10.1016/j.jand.2014.07.005.

Diet or exercise interventions vs combined behavioral weight management programs: a systematic review and meta-analysis of direct comparisons.

Johns DJ, Hartmann-Boyce J, Jebb SA, Aveyard P; Behavioural Weight Management Review Group.

Abstract

Weight loss can reduce the health risks associated with being overweight or obese. However, the most effective method of weight loss remains unclear. Some programs emphasize physical activity, others diet, but existing evidence is mixed as to whether these are more effective individually or in combination. We aimed to examine the clinical effectiveness of combined behavioral weight management programs (BWMPs) targeting weight loss in comparison to single component programs, using within study comparisons. We included randomized controlled trials of combined BWMPs compared with diet-only or physical activity-only programs with at least 12 months of follow-up, conducted in overweight and obese adults (body mass index ≥25). Systematic searches of nine databases were run and two reviewers extracted data independently. Random effects meta-analyses were conducted for mean difference in weight change at 3 to 6 months and 12 to 18 months using a baseline observation carried forward approach for combined BWMPs vs diet-only BWMPs and combined BWMPs vs physical activity-only BWMPs. In total, eight studies were included, representing 1,022 participants, the majority of whom were women. Six studies met the inclusion criteria for combined BWMP vs diet-only. Pooled results showed no significant difference in weight loss from baseline or at 3 to 6 months between the BWMPs and diet-only arms (-0.62 kg; 95% CI -1.67 to 0.44). However, at 12 months, a significantly greater weight-loss was detected in the combined BWMPs (-1.72 kg; 95% CI -2.80 to -0.64). Five studies met the inclusion criteria for combined BWMP vs physical activity-only. Pooled results showed significantly greater weight loss in the combined BWMPs at 3 to 6 months (-5.33 kg; 95% CI -7.61 to -3.04) and 12 to 18 months (-6.29 kg; 95% CI -7.33 to -5.25). Weight loss is similar in the short-term for diet-only and combined BWMPs but in the longer-term weight loss is increased when diet and physical activity are combined. Programs based on physical activity alone are less effective than combined BWMPs in both the short and long term.

KEYWORDS: Behavioral programme; Diet; Exercise; Obesity; Weight loss

PMID: 25257365 [PubMed - in process] PMCID: PMC4180002 **Free PMC Article**

Obes Rev. 2009 May;10(3):313-23. doi: 10.1111/j.1467-789X.2008.00547.x. Epub 2009 Jan 19.

Long-term effectiveness of diet-plus-exercise interventions vs. diet-only interventions for weight loss: a meta-analysis.

Wu T[1], Gao X, Chen M, van Dam RM.

Author information

Abstract

Diet and exercise are two of the commonest strategies to reduce weight. Whether a diet-plus-exercise intervention is more effective for weight loss than a diet-only intervention in the long-term has not been conclusively established. The objective of this study was to systemically review the effect of diet-plus-exercise interventions vs. diet-only interventions on both long-term and short-term weight loss. Studies were retrieved by searching MEDLINE and Cochrane Library (1966 - June 2008). Studies were included if they were randomized controlled trials comparing the effect of diet-plus-exercise interventions vs. diet-only interventions on weight loss for a minimum of 6 months among obese or overweight adults. Eighteen studies met our inclusion criteria. Data were independently extracted by two investigators using a standardized protocol. We found that the overall standardized mean differences between diet-plus-exercise interventions and diet-only interventions at the end of follow-up were -0.25 (95% confidence interval [CI]-0.36 to -0.14), with a P-value for heterogeneity of 0.4. Because there were two outcome measurements, weight (kg) and body mass index (kg m(-2)), we also stratified the results by weight and body mass index outcome. The pooled weight loss was 1.14 kg (95% CI 0.21 to 2.07) or 0.50 kg m(-2) (95% CI 0.21 to 0.79) greater for the diet-plus-exercise group than the diet-only group. We did not detect significant heterogeneity in either stratum. Even in studies lasting 2 years or longer, diet-plus-exercise interventions provided significantly greater weight loss than diet-only interventions. In summary, a combined diet-plus-exercise programme provided greater long-term weight loss than a diet-only programme. However, both diet-only and diet-plus-exercise programmes are associated with partial weight regain, and future studies should explore better strategies to limit weight regain and achieve greater long-term weight loss.

PMID: 19175510 [PubMed - indexed for MEDLINE]

Even in the studies that showed that exercise plus diet worked, it was a 0.5 to 1.14Kg weight loss over 2 years. That's 1-2 pounds at the most.

Ann Intern Med. 2007 Jul 3;147(1):41-50.

Meta-analysis: the effect of dietary counseling for weight loss.

Dansinger ML[1], Tatsioni A, Wong JB, Chung M, Balk EM.

Author information

Abstract

BACKGROUND: Dietary and lifestyle modification efforts are the primary treatments for people who are obese or overweight. The effect of dietary counseling on long-term weight change is unclear.

PURPOSE: To perform a meta-analysis of the effect of dietary counseling compared with usual care on body mass index (BMI) over time in adults.

DATA SOURCES: Early studies (1980 through 1997) from a previously published systematic review; MEDLINE and the Cochrane Central Register of Controlled Trials from 1997 through July 2006.

STUDY SELECTION: English-language randomized, controlled trials (> or =16 weeks in duration) in overweight adults that reported the effect of dietary counseling on weight. The authors included only weight loss studies with a dietary component.

DATA EXTRACTION: Single reviewers performed full data extraction; at least 1 additional reviewer reviewed the data.

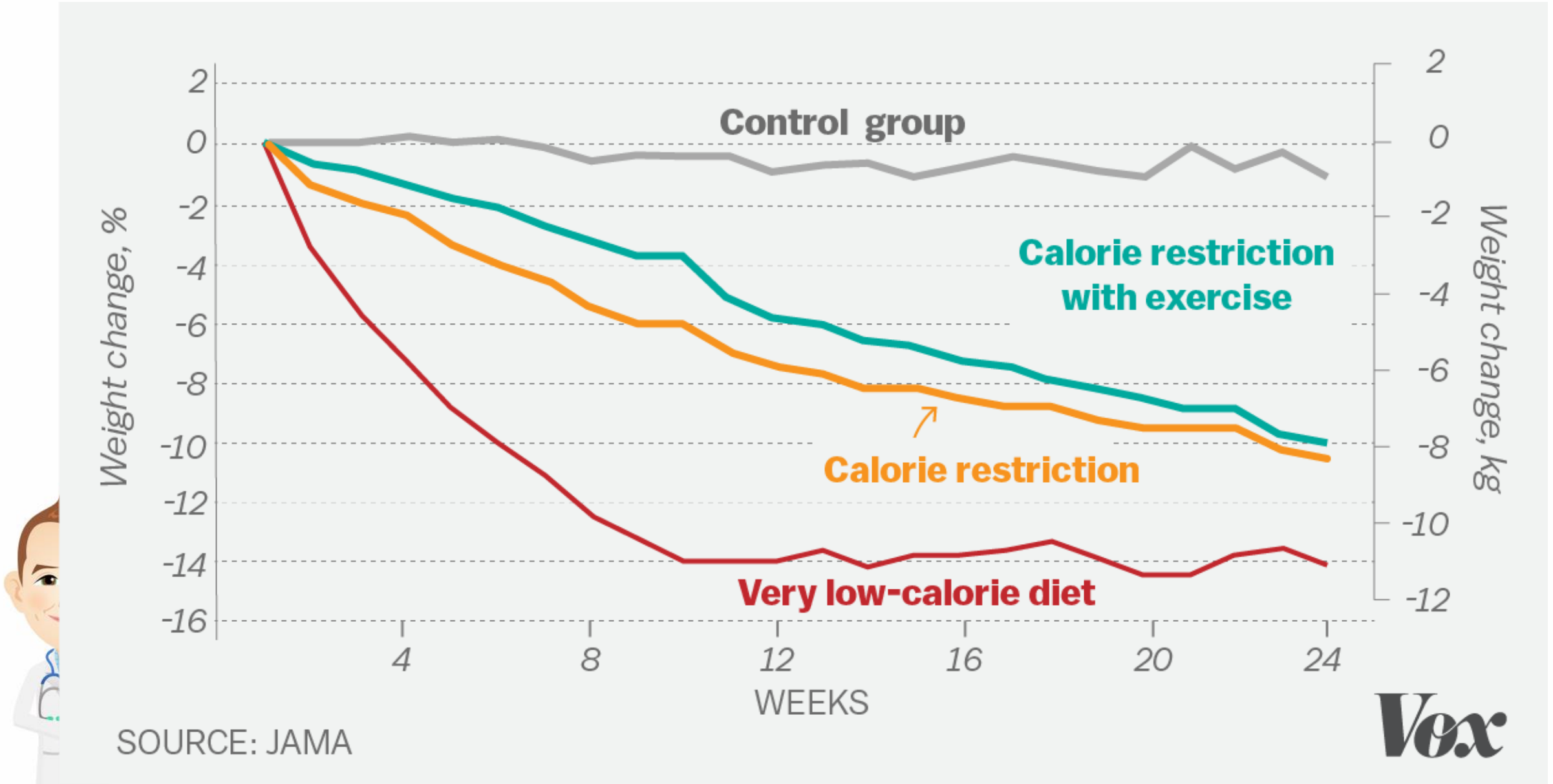
DATA SYNTHESIS: Random-effects model meta-analyses of 46 trials of dietary counseling revealed a maximum net treatment effect of -1.9 (95% CI, -2.3 to -1.5) BMI units (approximately -6%) at 12 months. Meta-analysis of changes in weight over time (slopes) and meta-regression suggest a change of approximately -0.1 BMI unit per month from 3 to 12 months of active programs and a regain of approximately 0.02 to 0.03 BMI unit per month during subsequent maintenance phases. Different analyses suggested that calorie recommendations, frequency of support meetings, inclusion of exercise, and diabetes may be independent predictors of weight change.

LIMITATIONS: The interventions, study samples, and weight changes were heterogeneous. Studies were generally of moderate to poor methodological quality. They had high rates of missing data and failed to explain these losses. The meta-analytic techniques could not fully account for these limitations.

CONCLUSIONS: Compared with usual care, dietary counseling interventions produce modest weight losses that diminish over time. In future studies, minimizing loss to follow-up and determining which factors result in more effective weight loss should be emphasized.

Comment in

Review: dietary counselling promotes modest weight loss, but the effect diminishes over time. [Evid Based Med. 2008]


Control group
Calorie restriction with exercise
Calorie restriction
Very low-calorie diet
Weight change, %
Weight change, kg
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4
8
12
16
20
24
WEEKS
SOURCE: JAMA
Vox

Component of TDEE	% of TDEE (approximate)	Definition	Change during Weight Loss
Basal Metabolic Rate (BMR)	70%	Amount of energy required to keep bodily functions processing at rest	Weight loss reduces metabolically active tissue which decreases BMR
Non-Exercise Activity Thermogenesis (NEAT)	15%	Energy expended during "non-exercise" movement such as fidgeting or normal daily activities	Evidence suggests that NEAT is decreased when in caloric restriction and remain reduced even after subjects return to freely feeding.
Thermic Effect of Food (TEF)	10%	Energy expended during process of ingesting, absorbing, metabolizing, and storing nutrients from food	Magnitude maintains but overall reduction because of caloric restriction
Exercise Activity Thermogenesis (EAT)	5%	Energy used during exercise	Exercise will increase this component but as you continue exercising with a weight loss goal, a reduction in body mass will reduce the energy requirement needed to complete a given amount of activity. Meaning as you lose weight, you expend less energy for the same amount of activity.

Modified from Trexler, Smith-Ryan, & Norton, 2014. **[8] Trexler, E. T., Smith-Ryan, A. E., & Norton, L. E. (2014). Metabolic adaptation to weight loss: implications for the athlete. Journal of the International Society of Sports Nutrition, 11(1), 7.**

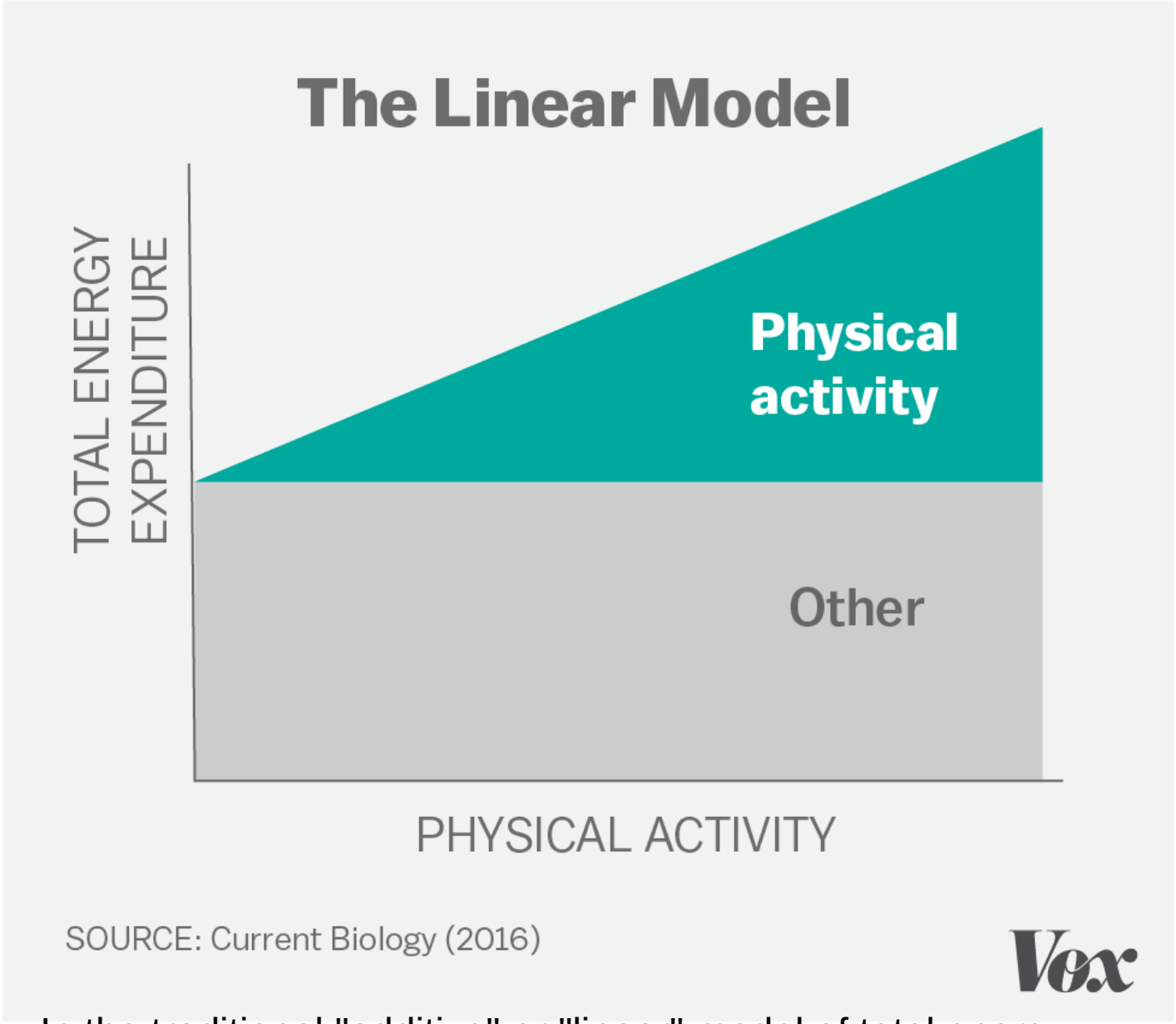
Calorie Expenditure 30 minutes Exercise

Activity Mode	110 lbs.	143 lbs.	187 lbs.	220 lbs.
Aerobic Dance	150	253	433	599
Moderate Cycling (12-13.9 mph)	184	311	531	735
Circuit Training	184	311	531	735
Bodybuilding/Powerlifting	139	232	397	551
Rowing, Moderate 100W	160	273	464	646
Running (10 min./mi.)	231	389	665	919
Running (7 min./mi.)	323	543	938	1286
Basketball Game	184	311	531	735
Boxing, Sparring	139	348	598	830
Soccer Game	231	389	665	919
Walking 3.0mph	76	130	219	305
Swimming Laps	231	389	665	919
Energy Expenditure (kcal/min) = (METs x 3.5 x Body Mass)/200				

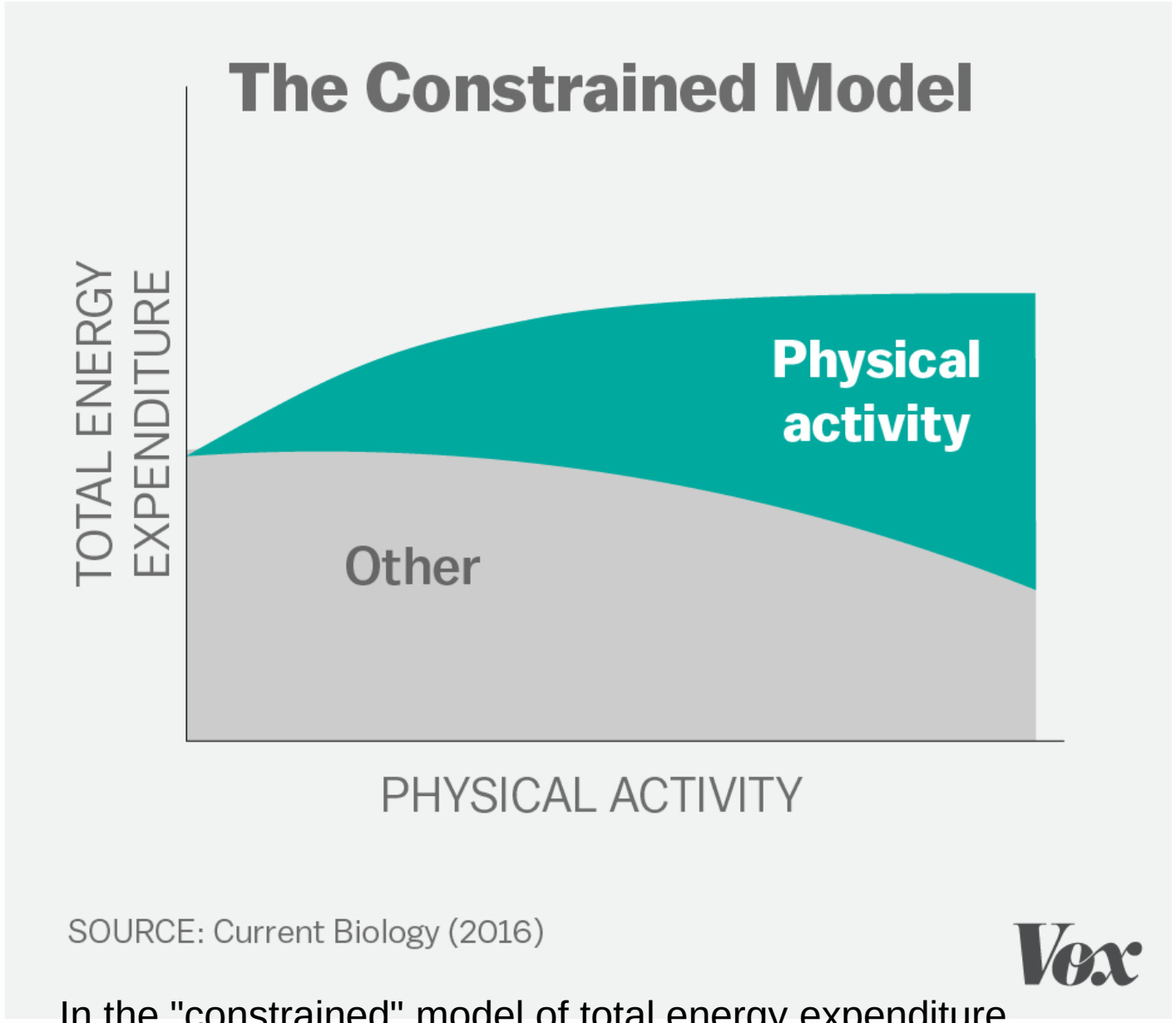
Hoffman, Jay. Norms for Fitness, Performance, and Health. Human Kinetics, 2006. [9] **Hoffman, J. (2006). Norms for fitness, performance, and health. Champaign, IL: Human Kinetics.**

Day of Week	Exercise Type and Time	Calorie Expenditure
Monday	Strength Training, 45 min.	826
	Walking (3.0 mph), 15 min.	152
Wednesday	Strength Training, 45 min.	826
	Walking (3.0 mph), 15 min.	152
Friday	Strength Training, 45 min.	826
	Walking (3.0 mph), 15 min.	152
Total Caloric Expenditure		***2934***

Still doesn’t add up to 3500 kcal which is required to burn 1 pound per week.



In the traditional "additive" or "linear" model of total energy expenditure, how many calories one burns is a simple linear function of physical activity.



In the "constrained" model of total energy expenditure, the body adapts to increased physical activity by reducing energy spent on other physiological activities.

Constrained Total Energy Expenditure and Metabolic Adaptation to Physical Activity in Adult Humans

Herman Pontzer Ramon Durazo-Arvizu Lara R. Dugas Richard S. Cooper Dale A. Schoeller Amy Luke
https://doi.org/10.1016/j.cub.2015.12.046

Highlights

•We measured total energy expenditure and physical activity in a large adult sample

•Above moderate activity levels, total energy expenditure plateaued

•Body fat percentage was positively related to total energy expenditure

•Activity intensity was inversely related to total energy expenditure

Summary

Current obesity prevention strategies recommend increasing daily physical activity, assuming that increased activity will lead to corresponding increases in total energy expenditure and prevent or reverse energy imbalance and weight gain [1, 2 ,3]. Such Additive total energy expenditure models are supported by exercise intervention and accelerometry studies reporting positive correlations between physical activity and total energy expenditure [4] but are challenged by ecological studies in humans and other species showing that more active populations do not have higher total energy expenditure [5 , 6 , 7 , 8]. Here we tested a Constrained total energy expenditure model, in which total energy expenditure increases with physical activity at low activity levels but plateaus at higher activity levels as the body adapts to maintain total energy expenditure within a narrow range. We compared total energy expenditure, measured using doubly labeled water, against physical activity, measured using accelerometry, for a large (n = 332) sample of adults living in five populations [9]. After adjusting for body size and composition, total energy expenditure was positively correlated with physical activity, but the relationship was markedly stronger over the lower range of physical activity. For subjects in the upper range of physical activity, total energy expenditure plateaued, supporting a Constrained total energy expenditure model. Body fat percentage and activity intensity appear to modulate the metabolic response to physical activity. Models of energy balance employed in public health [1 , 2 , 3] should be revised to better reflect the constrained nature of total energy expenditure and the complex effects of physical activity on metabolic physiology.

Homeostatic and non-homeostatic appetite control along the spectrum of physical activity levels: An updated perspective

Kristine Beaulieu [1], Mark Hopkins [2], John Blundell [3], Graham Finlayson [3]
Affiliations
•PMID: 29289613
•DOI: 10.1016/j.physbeh.2017.12.032
Free article

Abstract

The current obesogenic environment promotes physical inactivity and food consumption in excess of energy requirements, two important modifiable risk factors influencing energy balance. Habitual physical activity has been shown to impact not only energy expenditure, but also energy intake through mechanisms of appetite control. This review summarizes recent theory and evidence underpinning the role of physical activity in the homeostatic and non-homeostatic mechanisms controlling appetite. Energy intake along the spectrum of physical activity levels (inactive to highly active) appears to be J-shaped, with low levels of physical activity leading to dysregulated appetite and a mismatch between energy intake and expenditure. At higher levels, habitual physical activity influences homeostatic appetite control in a dual-process action by increasing the drive to eat through greater energy expenditure, but also by enhancing post-meal satiety, allowing energy intake to better match energy expenditure in response to hunger and satiety signals. There is clear presumptive evidence that physical activity energy expenditure can act as a drive (determinant) of energy intake. The influence of physical activity level on non-homeostatic appetite control is less clear, but low levels of physical activity may amplify hedonic states and behavioural traits favouring overconsumption indirectly through increased body fat. More evidence is required to understand the interaction between physical activity, appetite control and diet composition on passive overconsumption and energy balance. Furthermore, potential moderators of appetite control along the spectrum of physical activity, such as body composition, sex, and type, intensity and timing of physical activity, remain to be fully understood.

Key Points

1. Physical activity does more than just increase total energy expenditure. When activity is low, appetite is dysregulated, resulting in excess food intake and weight gain. Higher levels of activity seem to increase appetite control.

2. The combination of being too high in body fat and also being physically inactive may further dysregulate appetite and satiety signaling, making weight loss efforts even more difficult.

3. Physical activity and exercise may only be effective to a point for the goal of weight loss. At very high levels of physical activity, additional increases may not result in an increase in total energy expenditure, but rather a downregulation of energy expended from other components of total energy expenditure and no change in net expenditure.

Body adapts to exercise to the point where you are burning very few calories

And because you improve your cardiovascular endurance, it does become easier and you can do it using less calories

Physical activity, total and regional obesity: dose-response considerations

R Ross [1], I Janssen
Affiliations
•PMID: 11427779
•DOI: 10.1097/00005768-200106001-00023

Abstract

Purpose: This review was undertaken to determine whether exercise-induced weight loss was associated with corresponding reductions in total, abdominal, and visceral fat in a dose-response manner.

Methods: A literature search (MEDLINE, 1966--2000) was performed using appropriate keywords to identify studies that consider the influence of exercise-induced weight loss on total and/or abdominal fat. The reference lists of those studies identified were cross-referenced for additional studies.

Results: Total fat. Review of available evidence suggested that studies evaluating the utility of physical activity as a means of obesity reduction could be subdivided into two categories based on study duration. Short-term studies (< or = 16 wk, N = 20) were characterized by exercise programs that increased energy expenditure by values double (2200 vs 1100 kcal.wk-1) that of long-term studies (> or = 26 wk, N = 11). Accordingly, short-term studies report reductions in body weight (-0.18 vs -0.06 kg x wk(-1)) and total fat (-0.21 vs -0.06 kg x wk(-1)) that are threefold higher than those reported in long-term studies. Moreover, with respect to dose-response issues, the evidence from short-term studies suggest that exercise-induced weight loss is positively related to reductions in total fat in a dose-response manner. No such relationship was observed when the results from long-term studies were examined. Abdominal fat. Limited evidence suggests that exercise-induced weight loss is associated with reductions in abdominal obesity as measured by waist circumference or imaging methods; however, at present there is insufficient evidence to determine a dose-response relationship between physical activity, and abdominal or visceral fat.

Conclusion: In response to well-controlled, short-term trials, increasing physical activity expressed as energy expended per week is positively related to reductions in total adiposity in a dose-response manner. Although physical activity is associated with reduction in abdominal and visceral fat, there is insufficient evidence to determine a dose-response relationship.

Exercise can cause fat loss short term ~3 months, but once adapted, no longer causes fat loss.

Exercise?

- The amount of exercise you'd have to do to lose weight is time prohibitive.
- Burning an extra 500 calories per day would require jogging for 5-6 miles per day.
- That may take 90-120 minutes.
- The amount of energy you can burn from physical activity is capped and constrained.

- Exercise is good for keeping lost weight off, but will not help you lose weight
- Eating less and healthier is the key
- Exercise suppresses/increases appetite
- Exercise activates fight/flight response and puts the rest/digest system on hold
- Lowers cardiovascular mortality significantly
- Exercise alone ineffective for weight loss

Exercise

- Improves cardiovascular mortality
- Lowers BP, LDL, blood sugar
- Increase HDL
- Prevents weight re-gain
- Increase/Decrease hunger
- Activates compensatory adaptive mechanisms
- Does not cause significant weight loss

Mortality

J Am Coll Cardiol. 2014;64(5):472-481

- Running at even at a slow pace for 5-10 minutes just 1 or 2 times per week decreases cardiovascular mortality by 45%
- Doing it every day reduces cardiovascular mortality by 50%
- Reduced all cause mortality by 29%

Fitness vs Fatness

Fitness vs. fatness on all-cause mortality: a meta-analysis

Vaughn W Barry[1], Meghan Baruth[2], Michael W Beets[3], J Larry Durstine[3], Jihong Liu[4], Steven N Blair[5]
Affiliations
•PMID: 24438729
•DOI: 10.1016/j.pcad.2013.09.002

Abstract

The purpose of this study was to quantify the joint association of cardiorespiratory fitness (CRF) and weight status on mortality from all causes using meta-analytical methodology. Studies were included if they were (1) prospective, (2) objectively measured CRF and body mass index (BMI), and (3) jointly assessed CRF and BMI with all-cause mortality. Ten articles were included in the final analysis. Pooled hazard ratios were assessed for each comparison group (i.e. normal weight-unfit, overweight-unfit and -fit, and obese-unfit and -fit) using a random-effects model. Compared to normal weight-fit individuals, unfit individuals had twice the risk of mortality regardless of BMI. Overweight and obese-fit individuals had similar mortality risks as normal weight-fit individuals. Furthermore, the obesity paradox may not influence fit individuals. Researchers, clinicians, and public health officials should focus on physical activity and fitness-based interventions rather than weight-loss driven approaches to reduce mortality risk.

Fitness vs Fatness

Obesity paradox and cardiorespiratory fitness in 12,417 male veterans aged 40 to 70 years

Paul A McAuley[1], Peter F Kokkinos, Ricardo B Oliveira, Brian T Emerson, Jonathan N Myers
Affiliations
•PMID: 20118386
•PMCID: PMC2813818
•DOI: 10.4065/mcp.2009.0562
Free PMC article

Abstract

Objective: To evaluate the influence of cardiorespiratory fitness (fitness) on the obesity paradox in middle-aged men with known or suspected coronary artery disease.
Patients and methods: This study consists of 12,417 men aged 40 to 70 years (44% African American) who were referred for exercise testing at the Veterans Affairs Medical Centers in Washington, DC, or Palo Alto, CA (between January 1, 1983, and June 30, 2007). Fitness was quantified as metabolic equivalents achieved during a maximal exercise test and was categorized for analysis as low, moderate, and high (defined as <5, 5-10, and >10 metabolic equivalents, respectively). Adiposity was defined by body mass index (BMI) according to standard clinical guidelines. Separate and combined associations of fitness and adiposity with all-cause mortality were assessed by Cox proportional hazards analyses.
Results: We recorded 2801 deaths during a mean+/-SD follow-up of 7.7+/-5.3 years. Multivariate hazard ratios (95% confidence interval) for all-cause mortality, with normal weight (BMI, 18.5-24.9 kg/m2) used as the reference group, were 1.9 (1.5-2.3), 0.7 (0.7-0.8), 0.7 (0.6-0.7), and 1.0 (0.8-1.1) for BMIs of less than 18.5, 25.0 to 29.9, 30.0 to 34.9, and 35.0 or more kg/m2, respectively. Compared with highly fit normal-weight men, underweight men with low fitness had the highest (4.5 [3.1-6.6]) and highly fit overweight men the lowest (0.4 [0.3-0.6]) mortality risk of any subgroup. Overweight and obese men with moderate fitness had mortality rates similar to those of the highly fit normal-weight reference group.
Conclusion: Fitness altered the obesity paradox. Overweight and obese men had increased longevity only if they registered high fitness.

Cardio vs Weights

Effects of aerobic training, resistance training, or both on percentage body fat and cardiometabolic risk markers in obese adolescents: the healthy eating aerobic and resistance training in youth randomized clinical trial

Ronald J Sigal [1], Angela S Alberga [2], Gary S Goldfield [3], Denis Prud'homme [4], Stasia Hadjiyannakis [3], Réjeanne Gougeon [5], Penny Phillips [6], Heather Tulloch [7], Janine Malcolm [6], Steve Doucette [8], George A Wells [9], Jinhui Ma [10], Glen P Kenny [11]
Affiliations
•PMID: 25243536
•DOI: 10.1001/jamapediatrics.2014.1392

Abstract

Importance: Little evidence exists on which exercise modality is optimal for obese adolescents.
Objective: To determine the effects of aerobic training, resistance training, and combined training on percentage body fat in overweight and obese adolescents.
Design, setting, and participants: Randomized, parallel-group clinical trial at community-based exercise facilities in Ottawa (Ontario) and Gatineau (Quebec), Canada, among previously inactive postpubertal adolescents aged 14 to 18 years (Tanner stage IV or V) with body mass index at or above the 95th percentile for age and sex or at or above the 85th percentile plus an additional diabetes mellitus or cardiovascular risk factor.
Interventions: After a 4-week run-in period, 304 participants were randomized to the following 4 groups for 22 weeks: aerobic training (n = 75), resistance training (n = 78), combined aerobic and resistance training (n = 75), or nonexercising control (n = 76). All participants received dietary counseling, with a daily energy deficit of 250 kcal.
Main outcomes and measures: The primary outcome was percentage body fat measured by magnetic resonance imaging at baseline and 6 months. We hypothesized that aerobic training and resistance training would each yield greater decreases than the control and that combined training would cause greater decreases than aerobic or resistance training alone.
Results: Decreases in percentage body fat were -0.3 (95% CI, -0.9 to 0.3) in the control group, -1.1 (95% CI, -1.7 to -0.5) in the aerobic training group (P = .06 vs controls), and -1.6 (95% CI, -2.2 to -1.0) in the resistance training group (P = .002 vs controls). The -1.4 (95% CI, -2.0 to -0.8) decrease in the combined training group did not differ significantly from that in the aerobic or resistance training group. Waist circumference changes were -0.2 (95% CI, -1.7 to 1.2) cm in the control group, -3.0 (95% CI, -4.4 to -1.6) cm in the aerobic group (P = .006 vs controls), -2.2 (95% CI -3.7 to -0.8) cm in the resistance training group (P = .048 vs controls), and -4.1 (95% CI, -5.5 to -2.7) cm in the combined training group. In per-protocol analyses (≥ 70% adherence), the combined training group had greater changes in percentage body fat (-2.4, 95% CI, -3.2 to -1.6) vs the aerobic group (-1.2; 95% CI, -2.0 to -0.5; P = .04 vs the combined group) but not the resistance group (-1.6; 95% CI, -2.5 to -0.8).
Conclusions and relevance: Aerobic, resistance, and combined training reduced total body fat and waist circumference in obese adolescents. In more adherent participants, combined training may cause greater decreases than aerobic or resistance training alone.

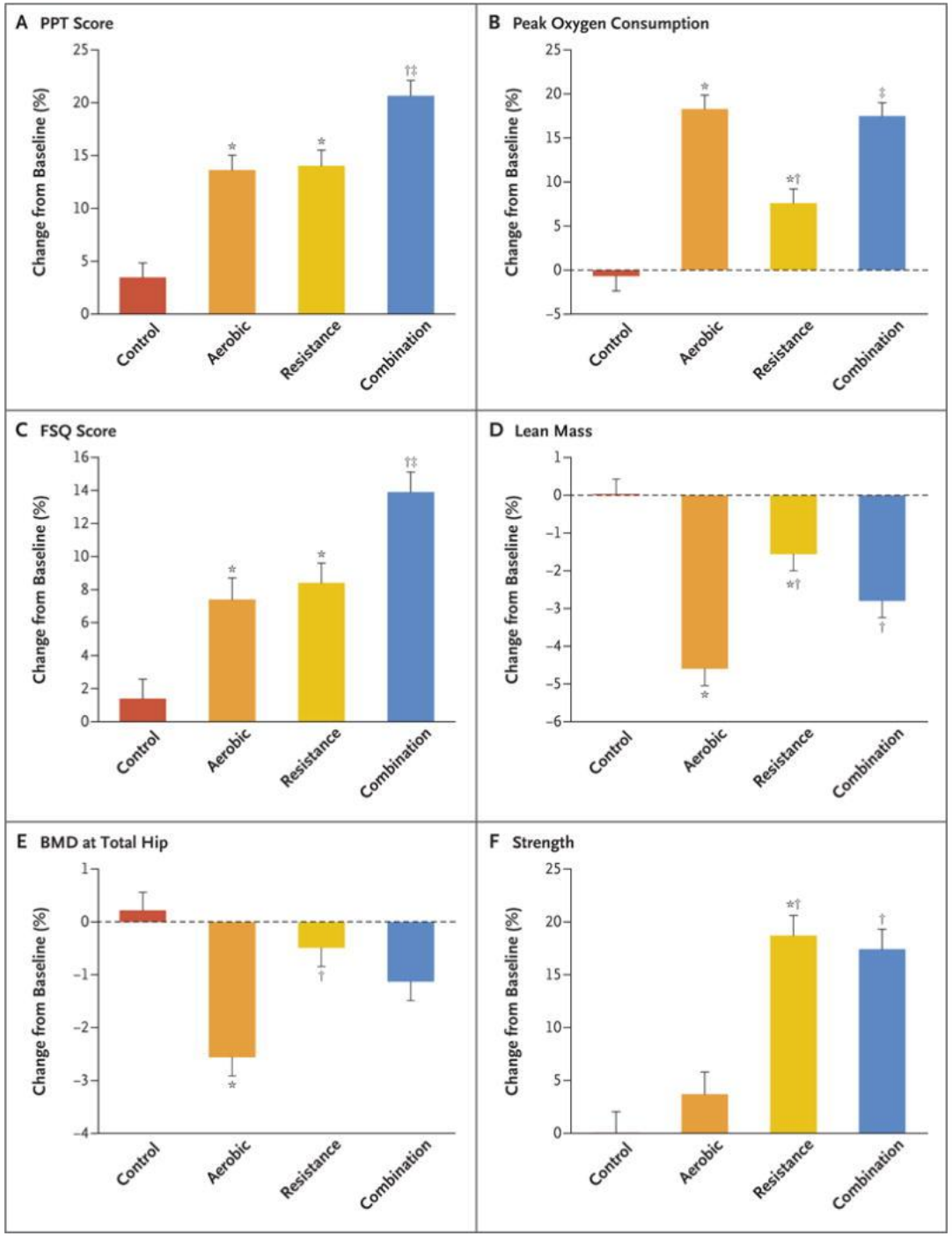
Cardio vs Weights

Aerobic or Resistance Exercise, or Both, in Dieting Obese Older Adults

Dennis T Villareal[1], Lina Aguirre[1], A Burke Gurney[1], Debra L Waters[1], David R Sinacore[1], Elizabeth Colombo[1], Reina Armamento-Villareal[1], Clifford Qualls[1]
Affiliations
•PMID: 28514618
•PMCID: PMC5552187
•DOI: 10.1056/NEJMoa1616338
Free PMC article

Abstract

Background: Obesity causes frailty in older adults; however, weight loss might accelerate age-related loss of muscle and bone mass and resultant sarcopenia and osteopenia.
Methods: In this clinical trial involving 160 obese older adults, we evaluated the effectiveness of several exercise modes in reversing frailty and preventing reduction in muscle and bone mass induced by weight loss. Participants were randomly assigned to a weight-management program plus one of three exercise programs - aerobic training, resistance training, or combined aerobic and resistance training - or to a control group (no weight-management or exercise program). The primary outcome was the change in Physical Performance Test score from baseline to 6 months (scores range from 0 to 36 points; higher scores indicate better performance). Secondary outcomes included changes in other frailty measures, body composition, bone mineral density, and physical functions.
Results: A total of 141 participants completed the study. The Physical Performance Test score increased more in the combination group than in the aerobic and resistance groups (27.9 to 33.4 points [21% increase] vs. 29.3 to 33.2 points [14% increase] and 28.8 to 32.7 points [14% increase], respectively; P=0.01 and P=0.02 after Bonferroni correction); the scores increased more in all exercise groups than in the control group (P<0.001 for between-group comparisons). Peak oxygen consumption (milliliters per kilogram of body weight per minute) increased more in the combination and aerobic groups (17.2 to 20.3 [17% increase] and 17.6 to 20.9 [18% increase], respectively) than in the resistance group (17.0 to 18.3 [8% increase]) (P<0.001 for both comparisons). Strength increased more in the combination and resistance groups (272 to 320 kg [18% increase] and 288 to 337 kg [19% increase], respectively) than in the aerobic group (265 to 270 kg [4% increase]) (P<0.001 for both comparisons). Body weight decreased by 9% in all exercise groups but did not change significantly in the control group. Lean mass decreased less in the combination and resistance groups than in the aerobic group (56.5 to 54.8 kg [3% decrease] and 58.1 to 57.1 kg [2% decrease], respectively, vs. 55.0 to 52.3 kg [5% decrease]), as did bone mineral density at the total hip (grams per square centimeter; 1.010 to 0.996 [1% decrease] and 1.047 to 1.041 [0.5% decrease], respectively, vs. 1.018 to 0.991 [3% decrease]) (P<0.05 for all comparisons). Exercise-related adverse events included musculoskeletal injuries.
Conclusions: Of the methods tested, weight loss plus combined aerobic and resistance exercise was the most effective in improving functional status of obese older adults. (Funded by the National Institutes of Health; LITOE ClinicalTrials.gov number, NCT01065636 .).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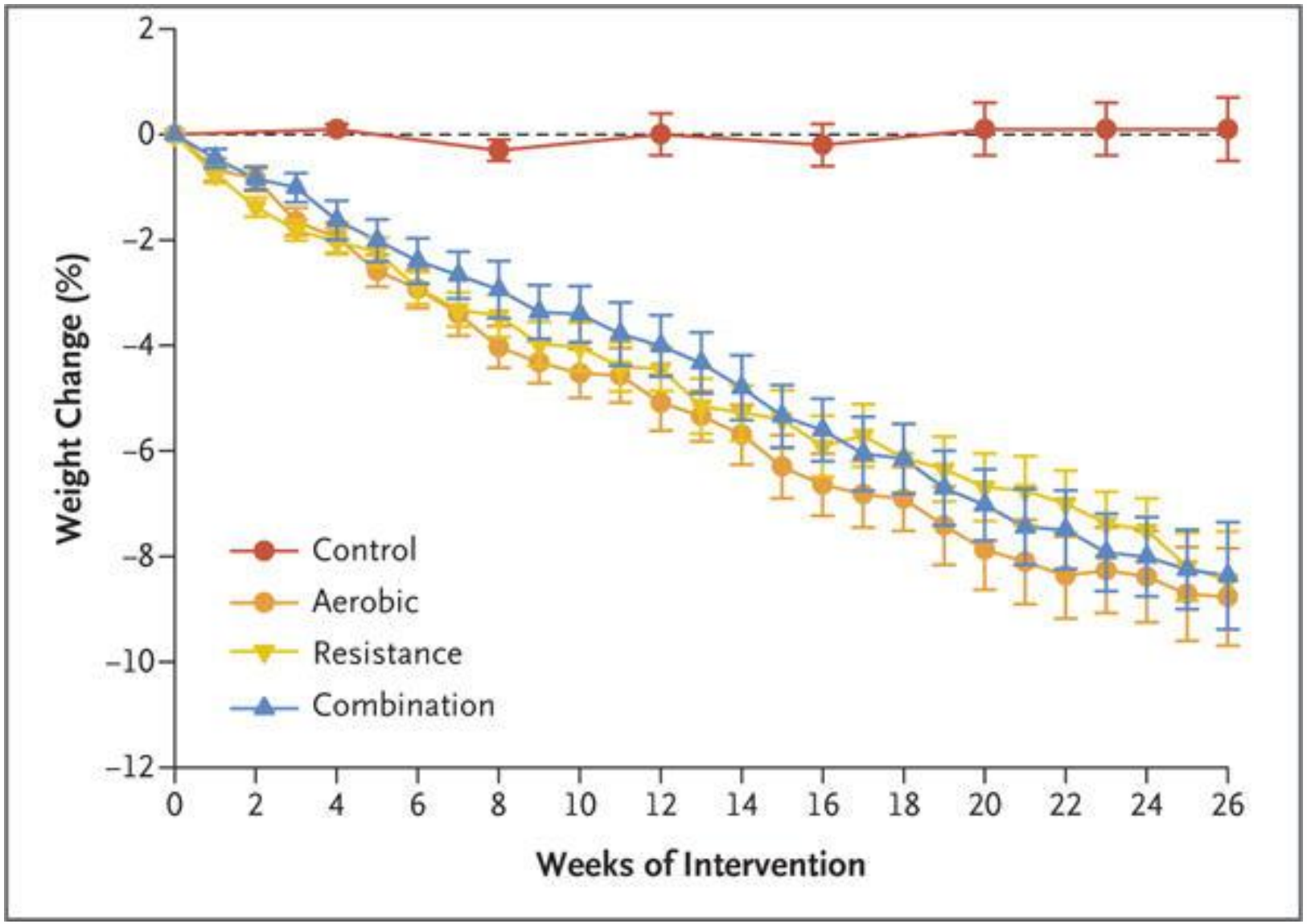
Weight Change (%)
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16
18
20
22
24
26
Weeks of Intervention
Control
Aerobic
Resistance
Combination

HIIT vs MIT

High Intensity Interval- vs Moderate Intensity- Training for Improving Cardiometabolic Health in Overweight or Obese Males: A Randomized Controlled Trial

Gordon Fisher [1], Andrew W Brown [2], Michelle M Bohan Brown [3], Amy Alcorn [2], Corey Noles [4], Leah Winwood [4], Holly Resuehr [5], Brandon George [2], Madeline M Jeansonne [2], David B Allison [6]
Affiliations
•PMID: 26489022
•PMCID: PMC4619258
•DOI: 10.1371/journal.pone.0138853
Free PMC article

Abstract

Purpose: To compare the effects of six weeks of high intensity interval training (HIIT) vs continuous moderate intensity training (MIT) for improving body composition, insulin sensitivity (SI), blood pressure, blood lipids, and cardiovascular fitness in a cohort of sedentary overweight or obese young men. We hypothesized that HIIT would result in similar improvements in body composition, cardiovascular fitness, blood lipids, and SI as compared to the MIT group, despite requiring only one hour of activity per week compared to five hours per week for the MIT group.

Methods: 28 sedentary overweight or obese men (age, 20 ± 1.5 years, body mass index 29.5 ± 3.3 kg/m2) participated in a six week exercise treatment. Participants were randomly assigned to HIIT or MIT and evaluated at baseline and post-training. DXA was used to assess body composition, graded treadmill exercise test to measure cardiovascular fitness, oral glucose tolerance to measure SI, nuclear magnetic resonance spectroscopy to assess lipoprotein particles, and automatic auscultation to measure blood pressure.

Results: A greater improvement in VO2peak was observed in MIT compared to HIIT (11.1% vs 2.83%, P = 0.0185) in the complete-case analysis. No differences were seen in the intention to treat analysis, and no other group differences were observed. Both exercise conditions were associated with temporal improvements in % body fat, total cholesterol, medium VLDL, medium HDL, triglycerides, SI, and VO2peak (P < 0.05).

Conclusion: Participation in HIIT or MIT exercise training displayed: 1) improved SI, 2) reduced blood lipids, 3) decreased % body fat, and 4) improved cardiovascular fitness. While both exercise groups led to similar improvements for most cardiometabolic risk factors assessed, MIT led to a greater improvement in overall cardiovascular fitness. Overall, these observations suggest that a relatively short duration of either HIIT or MIT training may improve cardiometabolic risk factors in previously sedentary overweight or obese young men, with no clear advantage between these two specific regimes (Clinical Trial Registry number NCT01935323).

Post MI and CAD?

Effect of combined aerobic and resistance training versus aerobic training alone in individuals with coronary artery disease: a meta-analysis

Susan Marzolini [1], Paul I Oh, Dina Brooks
Affiliations
•PMID: 21450617
•DOI: 10.1177/1741826710393197

Abstract

Background: Resistance training (RT) has only a permissive role as an adjunct to aerobic training (AT) in cardiac rehabilitation.
Design and methods: To compare the effect of AT with combined RT and AT (CT) we searched MEDLINE, Cochrane Controlled Trials Register, EMBASE, PreMedline, SPORT DISCUS, CINAHL (from the earliest date available to October 2009) for randomized controlled trials (RCTs), examining effects of CT versus AT on body composition, cardiovascular fitness (VO(2peak)), strength, and quality-of-life (QOL) in coronary artery disease (CAD) (excluding heart failure). Two reviewers selected studies independently.
Results: Twelve studies met the study criteria (229 AT patients, 275 CT patients). Compared with AT, CT decreased percent body fat by -2.3% (WMD (weighted mean difference); 95% CI: -3.59 to -1.02), decreased trunk fat (SMD (standardized mean difference): -0.56; 95% CI: -0.96 to -0.15) and increased fat-free mass by 0.9 kg (WMD; 95% CI: 0.39 to 1.36) in three studies (n = 106). Similarly CT was associated with larger increases in lower body strength (seven studies, n = 225, SMD: 0.77; 95% CI: 0.49 to 1.04) and upper body strength (eight studies, n = 262, SMD: 1.07; 95% CI: 0.76 to 1.38). Compared to AT, CT improved peak work capacity (three studies, n = 92, SMD: 0.88; 95% CI: 0.45 to 1.31) and there was a trend for CT to increase VO(2peak) by 0.41 ml/kg/min (nine studies, n = 399, WMD; 95% CI: -0.05 to 0.88). Qualitative analysis of QOL data favors CT. Study withdrawals were similar for AT (14.2% ± 13.2) and CT (11.5% ± 15.5). No serious adverse events were reported.
Conclusions: CT is more effective than AT in improving body composition, strength, and some indicators of cardiovascular fitness, and does not compromise study completion or safety when compared to AT.

https://www.mayoclinicproceedings.org/article/S0025-6196(12)00473-9/fulltext

- Article Highlights

- People who exercise regularly have markedly lower rates of disability and a mean life expectancy that is 7 years longer than that of their physically inactive contemporaries. However, a safe upper-dose limit potentially exists, beyond which the adverse effects of exercise may outweigh its benefits.
- Chronic intense and sustained exercise can cause patchy myocardial fibrosis, particularly in the atria, interventricular septum, and right ventricle, creating a substrate for atrial and ventricular arrhythmias.
- Chronic excessive sustained exercise may also be associated with coronary artery calcification, diastolic dysfunction, and large-artery wall stiffening.
- Veteran endurance athletes in sports such as marathon or ultramarathon running or professional cycling have been noted to have a 5-fold increase in the prevalence of atrial fibrillation.
- Intense endurance exercise efforts often cause elevation in biomarkers of myocardial injury (troponin and B-type natriuretic peptide), which were correlated with transient reductions in right ventricular ejection fraction.

› Eur Heart J. 2008 Aug;29(15):1903-10. doi: 10.1093/eurheartj/ehn163. Epub 2008 Apr 21.

Running: the risk of coronary events : Prevalence and prognostic relevance of coronary atherosclerosis in marathon runners

Stefan Möhlenkamp [1], Nils Lehmann, Frank Breuckmann, Martina Bröcker-Preuss, Kai Nassenstein, Martin Halle, Thomas Budde, Klaus Mann, Jörg Barkhausen, Gerd Heusch, Karl-Heinz Jöckel, Raimund Erbel, Marathon Study Investigators; Heinz Nixdorf Recall Study Investigators

Affiliations + expand

PMID: 18426850 DOI: 10.1093/eurheartj/ehn163

Abstract

Aims: To quantify the prevalence of coronary artery calcification (CAC) in relation to cardiovascular risk factors in marathon runners, and to study its role for myocardial damage and coronary events.

Methods and results: In 108 apparently healthy male marathon runners aged >or=50 years, with >or=5 marathon competitions during the previous three years, the running history, Framingham risk score (FRS), CAC, and presence of myocardial late gadolinium enhancement (LGE) were measured. Control groups were matched by age (8:1) and FRS (2:1) from the Heinz Nixdorf Recall Study. The FRS in marathon runners was lower than in age-matched controls (7 vs. 11%, P < 0.0001). However, the CAC distribution was similar in marathon runners and age-matched controls (median CAC: 36 vs. 38, P = 0.36) and higher in marathon runners than in FRS-matched controls (median CAC: 36 vs. 12, P = 0.02). CAC percentile values and number of marathons independently predicted the presence of LGE (prevalence = 12%) (P = 0.02 for both). During follow-up after 21.3 +/- 2.8 months, four runners with CAC >or= 100 experienced coronary events. Event-free survival was inversely related to CAC burden (P = 0.018).

Conclusion: Conventional cardiovascular risk stratification underestimates the CAC burden in presumably healthy marathon runners. As CAC burden and frequent marathon running seem to correlate with subclinical myocardial damage, an increased awareness of a potentially higher than anticipated coronary risk is warranted.

Bone loss

Strength training stops bone loss and builds muscle in postmenopausal breast cancer survivors: a randomized, controlled trial

Kerri M Winters-Stone[1], Jessica Dobek, Lillian Nail, Jill A Bennett, Michael C Leo, Arpana Naik, Anna Schwartz
Affiliations
•PMID: 21424279
•PMCID: PMC3124708
•DOI: 10.1007/s10549-011-1444-z
Free PMC article

Abstract

Targeted exercise training could reduce risk factors for fracture and obesity-related diseases that increase from breast cancer treatment, but has not been sufficiently tested. We hypothesized that progressive, moderate-intensity resistance + impact training would increase or maintain hip and spine bone mass, lean mass and fat mass and reduce bone turnover compared to controls who participated in a low-intensity, non-weight bearing stretching program. We conducted a randomized, controlled trial in 106 women with early stage breast cancer who were >1 year post-radiation and/or chemotherapy, ≥ 50 years of age at diagnosis and postmenopausal, free from osteoporosis and medications for bone loss, resistance and impact exercise naïve, and cleared to exercise by a physician. Women were randomly assigned to participate in 1 year of thrice-weekly progressive, moderate-intensity resistance + impact (jump) exercise or in a similar frequency and length control program of progressive, low-intensity stretching. Primary endpoints were bone mineral density (BMD; g/cm^2) of the hip and spine and whole body bone-free lean and fat mass (kg) determined by DXA and biomarkers of bone turnover-serum osteocalcin (ng/ml) and urinary deoxypyrodiniline cross-links (nmol/mmolCr). Women in the resistance + impact training program preserved BMD at the lumbar spine (0.47 vs. -2.13%; P = 0.001) compared to controls. The resistance + impact group had a smaller increase in osteocalcin (7.0 vs. 27%, P = 0.03) and a larger decrease in deoxypyrodinoline (-49.9 vs. -32.6%, P = 0.06) than controls. Increases in lean mass from resistance + impact training were greatest among women currently taking aromatase inhibitors compared to controls not on this therapy (P = 0.01). Our combined program of resistance + impact exercise reduced risk factors for fracture among postmenopausal breast cancer survivors (BCS) and may be particularly relevant for BCS on aromatase inhibitors (AIs) because of the additional benefit of exercise on muscle mass that could reduce falls.

Ageing?

Resistance Training Reduces Age- and Geography-Related Physical Function Discrepancies in Older Adults

Breanne S Baker[1], Kristin Miller[1], Kelsey J Weitzel[1], Dana L Duren[1], Robin Gammon[1], Susan Mills-Gray[1], Stephen D Ball[1]
Affiliations
•PMID: 33614831
•PMCID: PMC7868454
•DOI: 10.1177/2333721421992251
Free PMC article

Abstract

Comorbidities affecting physical function increase with advanced-age and rural living. This study investigated the degree of benefit from resistance training (RT) in older adults based on age (50-89 years), location (urban vs. rural), and program duration (10 vs. 8-weeks). 260 participants completed pre- and post-program dynamic and static tasks and flexibility testing. Paired and independent *t*-tests and one-way and repeated measures ANOVAs were used to test group improvements. All ages improved performance (all $p \leq .002$) but those in their 50's improved flexibility the most and those in their 60's improved 30STS more and tandem balance less than those in their 80's. Both rural and urban participants improved in all areas (all $p \leq .002$), but rural participants reported greater improvements in tandem balance. Both 10- and 8-week classes improved performance (all $p \leq .001$), but 8-week participants improved dynamic tasks and tandem balance more. RT can reduce functional discrepancies in older adults and rural residents.

Fast or Slow?

Effect of two different weight-loss rates on body composition and strength and power-related performance in elite athletes

Ina Garthe[1], Truls Raastad, Per Egil Refsnes, Anu Koivisto, Jorunn Sundgot-Borgen
Affiliations
•PMID: 21558571
•DOI: 10.1123/ijsnem.21.2.97

Abstract

When weight loss (WL) is necessary, athletes are advised to accomplish it gradually, at a rate of 0.5-1 kg/wk. However, it is possible that losing 0.5 kg/wk is better than 1 kg/wk in terms of preserving lean body mass (LBM) and performance. The aim of this study was to compare changes in body composition, strength, and power during a weekly body-weight (BW) loss of 0.7% slow reduction (SR) vs. 1.4% fast reduction (FR). We hypothesized that the faster WL regimen would result in more detrimental effects on both LBM and strength-related performance. Twenty-four athletes were randomized to SR (n = 13, 24 ± 3 yr, 71.9 ± 12.7 kg) or FR (n = 11, 22 ± 5 yr, 74.8 ± 11.7 kg). They followed energy-restricted diets promoting the predetermined weekly WL. All athletes included 4 resistance-training sessions/wk in their usual training regimen. The mean times spent in intervention for SR and FR were 8.5 ± 2.2 and 5.3 ± 0.9 wk, respectively ($p < .001$). BW, body composition (DEXA), 1-repetition-maximum (1RM) tests, 40-m sprint, and countermovement jump were measured before and after intervention. Energy intake was reduced by 19% ± 2% and 30% ± 4% in SR and FR, respectively ($p = .003$). BW and fat mass decreased in both SR and FR by 5.6% ± 0.8% and 5.5% ± 0.7% (0.7% ± 0.8% vs. 1.0% ± 0.4%/wk) and 31% ± 3% and 21 ± 4%, respectively. LBM increased in SR by 2.1% ± 0.4% ($p < .001$), whereas it was unchanged in FR (-0.2% ± 0.7%), with significant differences between groups ($p < .01$). In conclusion, data from this study suggest that athletes who want to gain LBM and increase 1RM strength during a WL period combined with strength training should aim for a weekly BW loss of 0.7%.

The effect of 12 weeks of aerobic, resistance or combination exercise training on cardiovascular risk factors in the overweight and obese in a randomized trial

Suleen S Ho [1], Satvinder S Dhaliwal, Andrew P Hills, Sebely Pal

Affiliations + expand

PMID: 23006411 PMCID: PMC3487794 DOI: 10.1186/1471-2458-12-704

Free PMC article

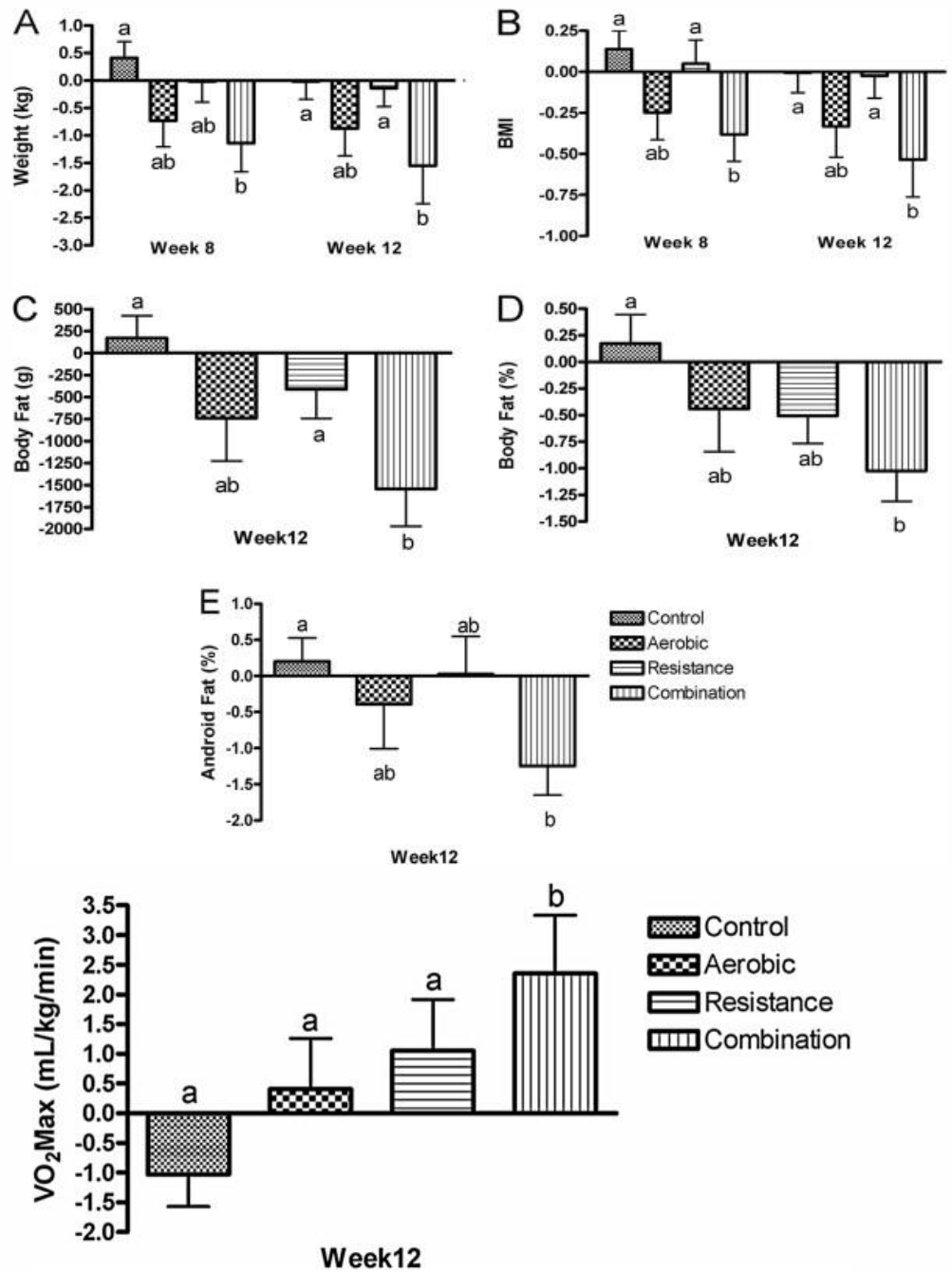
Abstract

Background: Evidence suggests that exercise training improves CVD risk factors. However, it is unclear whether health benefits are limited to aerobic training or if other exercise modalities such as resistance training or a combination are as effective or more effective in the overweight and obese. The aim of this study is to investigate whether 12 weeks of moderate-intensity aerobic, resistance, or combined exercise training would induce and sustain improvements in cardiovascular risk profile, weight and fat loss in overweight and obese adults compared to no exercise.

Methods: Twelve-week randomized parallel design examining the effects of different exercise regimes on fasting measures of lipids, glucose and insulin and changes in body weight, fat mass and dietary intake. Participants were randomized to either: Group 1 (Control, n = 16); Group 2 (Aerobic, n = 15); Group 3 (Resistance, n = 16); Group 4 (Combination, n = 17). Data was analysed using General Linear Model to assess the effects of the groups after adjusting for baseline values. Within-group data was analyzed with the paired t-test and between-group effects using post hoc comparisons.

Results: Significant improvements in body weight (-1.6%, p = 0.044) for the Combination group compared to Control and Resistance groups and total body fat compared to Control (-4.4%, p = 0.003) and Resistance (-3%, p = 0.041). Significant improvements in body fat percentage (-2.6%, p = 0.008), abdominal fat percentage (-2.8%, p = 0.034) and cardio-respiratory fitness (13.3%, p = 0.006) were seen in the Combination group compared to Control. Levels of ApoB48 were 32% lower in the Resistance group compared to Control (p = 0.04).

Conclusion: A 12-week training program comprising of resistance or combination exercise, at moderate-intensity for 30 min, five days/week resulted in improvements in the cardiovascular risk profile in overweight and obese participants compared to no exercise. From our observations, combination exercise gave greater benefits for weight loss, fat loss and cardio-respiratory fitness than aerobic and resistance training modalities. Therefore, combination exercise training should be recommended for overweight and obese adults in National Physical Activity Guidelines.This clinical trial was registered with the Australian New Zealand Clinical Trials Registry (ANZCTR), registration number: ACTRN12609000684224.



What kind of Exercise?

Treadmill

- Assuming you weigh 200 pounds, if you walk or jog for 3 miles you will burn about 300 calories. That's not much! That's one plain bagel with cheese from Panera.

Weights

- A 200 pound person doing squats for 2 minutes straight, non-stop burns 320 calories. That's only 2 minutes of resistance training! Even if you aren't putting up any weight, just your body weight. Two minutes, 320 calories. Better to do two minutes of squats than run for 3 miles if you just want to burn calories.

Exercise

- Weights and resistance training is much more effective than running on a treadmill (increases BMR)
- Explosive runs/sprints
- Especially true for women and people with low metabolism

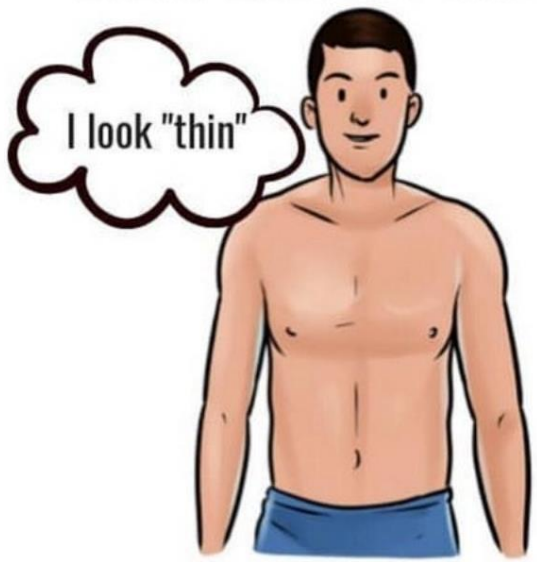
LIFT WEIGHTS TO BURN CALORIES!

Weight Training vs Cardio

- Anyone can weight lift, not everyone can run or swim
- Increases BMR
- Improves strength
- Improves mobility
- Improves quality of life
- Improves body composition
- Improves functionality

THE KEY TO LOSING FAT IS LIFTING WEIGHTS!

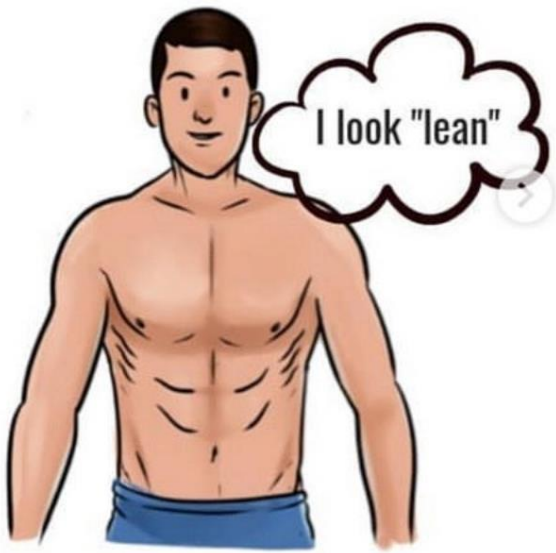
DIET/CARDIO ONLY



BODY FAT LEVELS: ↓

MUSCLE MASS: ↓

DIET & WEIGHTS



BODY FAT LEVELS: ↓

MUSCLE MASS: ↑–

WEIGHT LOSS vs FAT LOSS

150 pounds
35% body fat

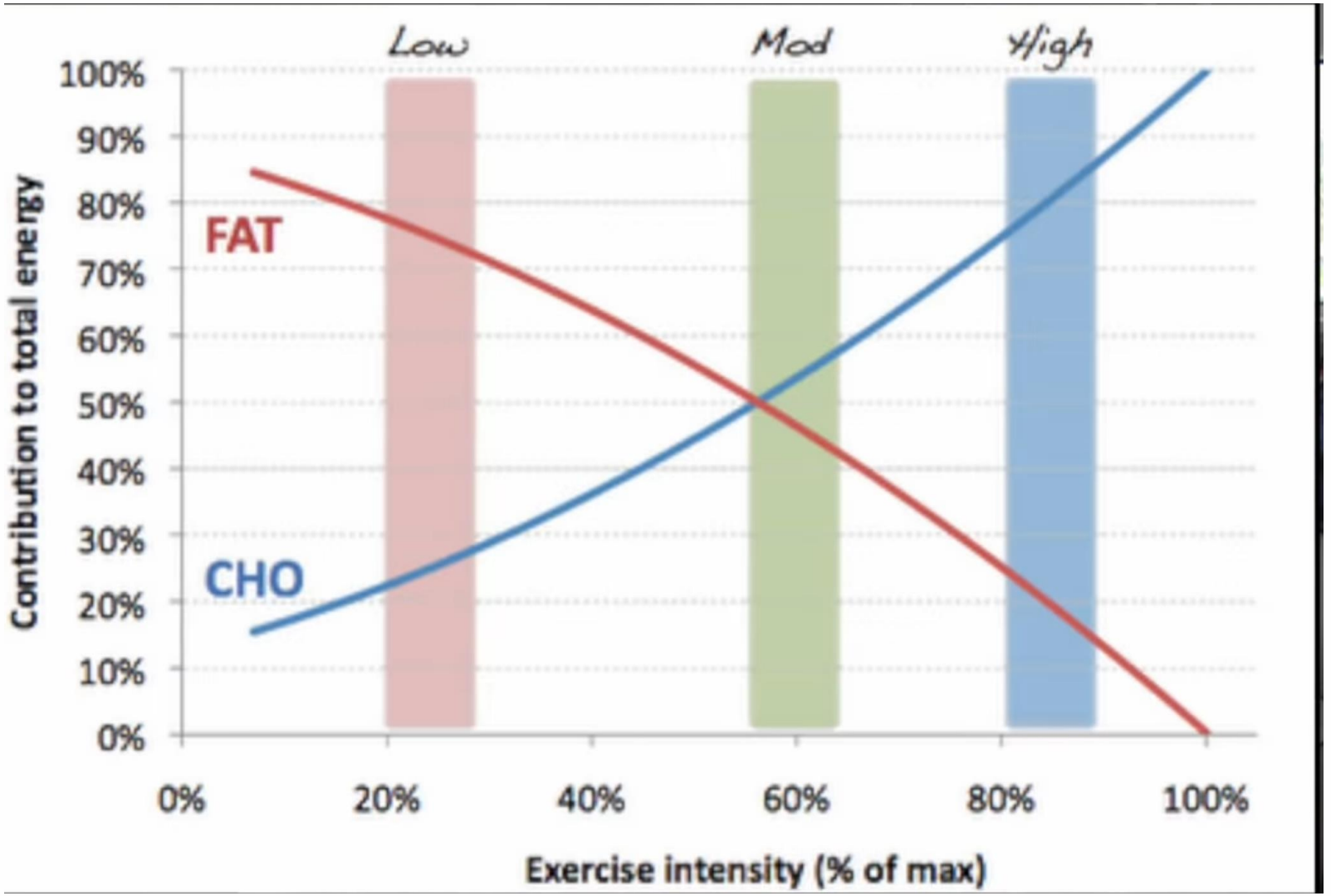
150 pounds
20% body fat

WEIGHT LOSS

FAT LOSS

Exercise Prescription

- Include cardio and resistance training
- Start at appropriate intensity
- Start with more cardio in beginning
- Transition to more resistance over time
- Weights increase over time
- Adapt over time


Low
Mod
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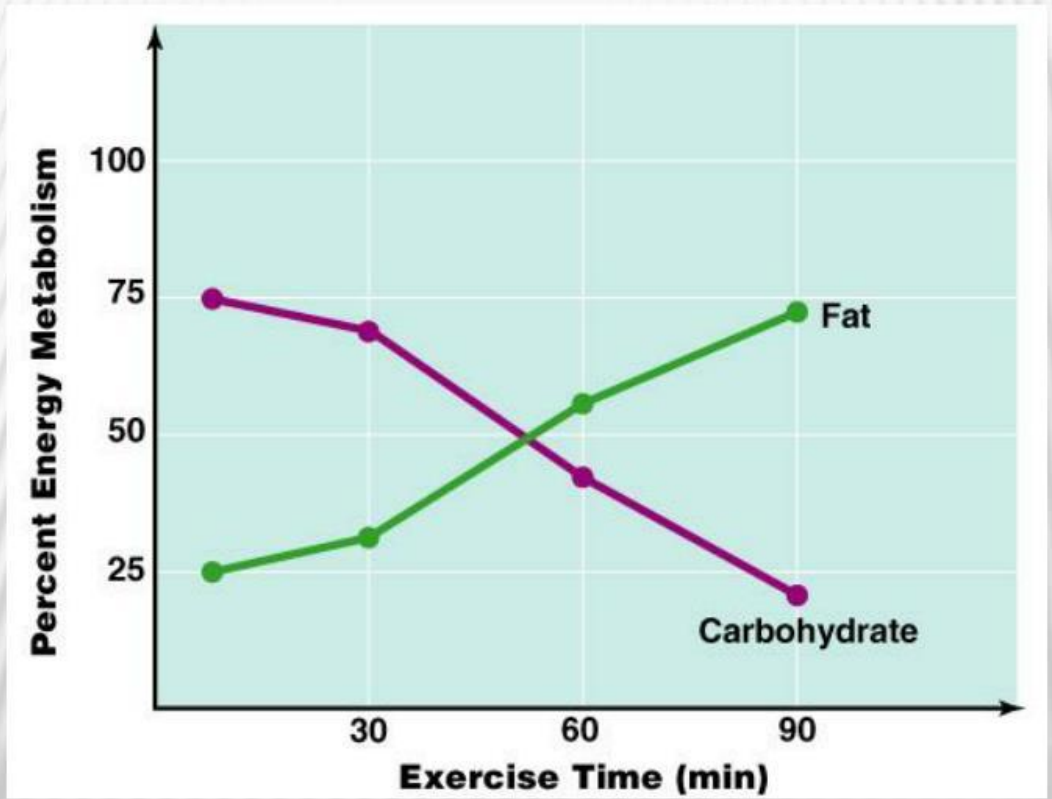
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
FAT
CHO
Contribution to total energy
0%
20%
40%
60%
80%
100%
Exercise intensity (% of max)

CHANGES IN CARBOHYDRATE and FAT UTILIZATION DURING 90 MINUTES of AEROBIC EXERCISE.



So is it just a matter of calories in vs calories out?

CICO?

Weight Loss

- 97% can be achieved with diet alone.
- Exercise is good for cardiovascular health, but not necessary for weight loss

Don’t say “diet **AND** exercise”

So is it just a matter of calories in vs calories out?

CICO?

No, it's just CALORIES IN!

The Out part needs to be taken out!

The Case for More Muscle

- Protects against cardiovascular mortality
- Protects against cancer
- Protects against chronic illness
- Shortens ICU stay

Cardiovascular Risk

Conclusions:

Obesity and elevated BMI increase all inflammatory and CV risk factors

Calorie deficit and weight loss improve all CV risk factors

Macronutrient breakdown makes no difference

Leaner individuals have less CV risk

Calories Out

- Very difficult to change this
- Don’t eat back calories that you burn off
- Calories and exercise should be independent
- We really don’t know how much we are burning off and it is usually capped

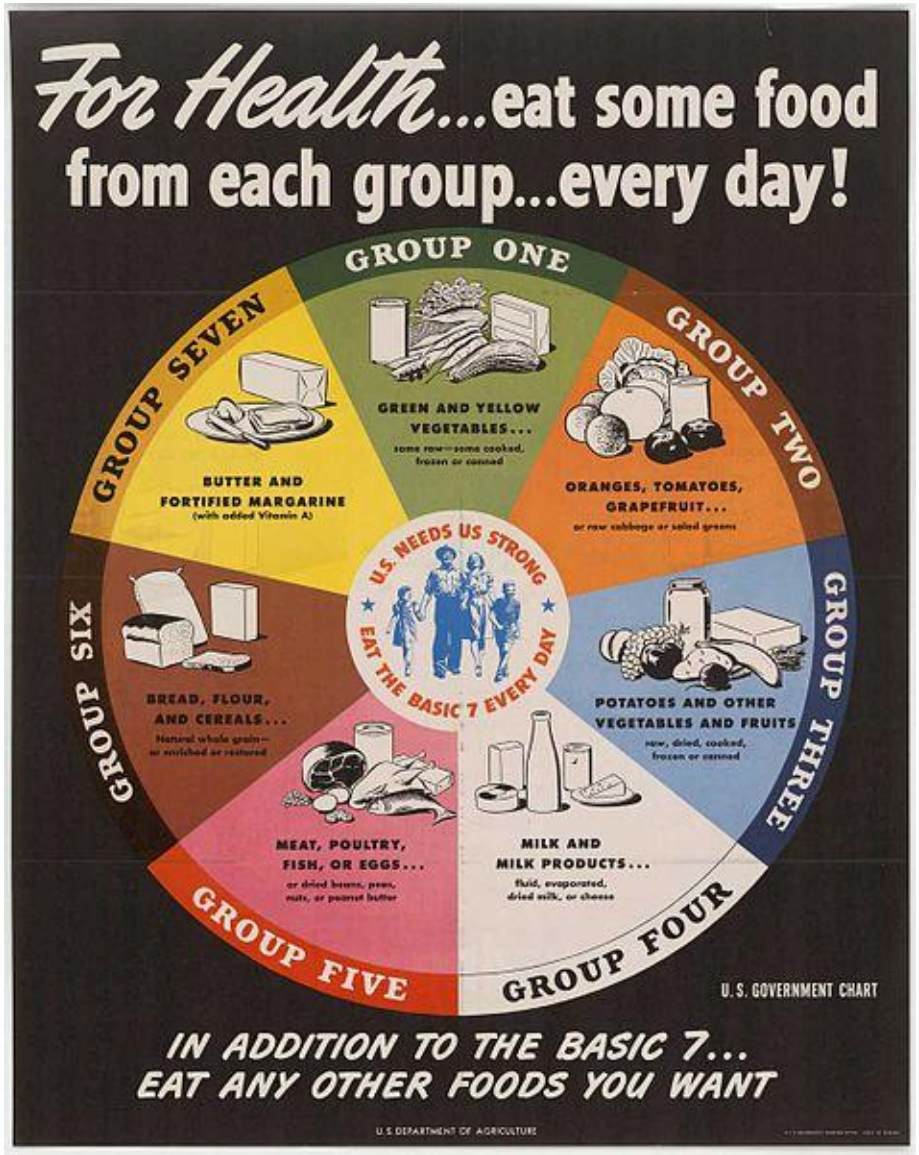
Body Recomposition

Can gain Muscle and Lose fat at the same time in a calorie deficit

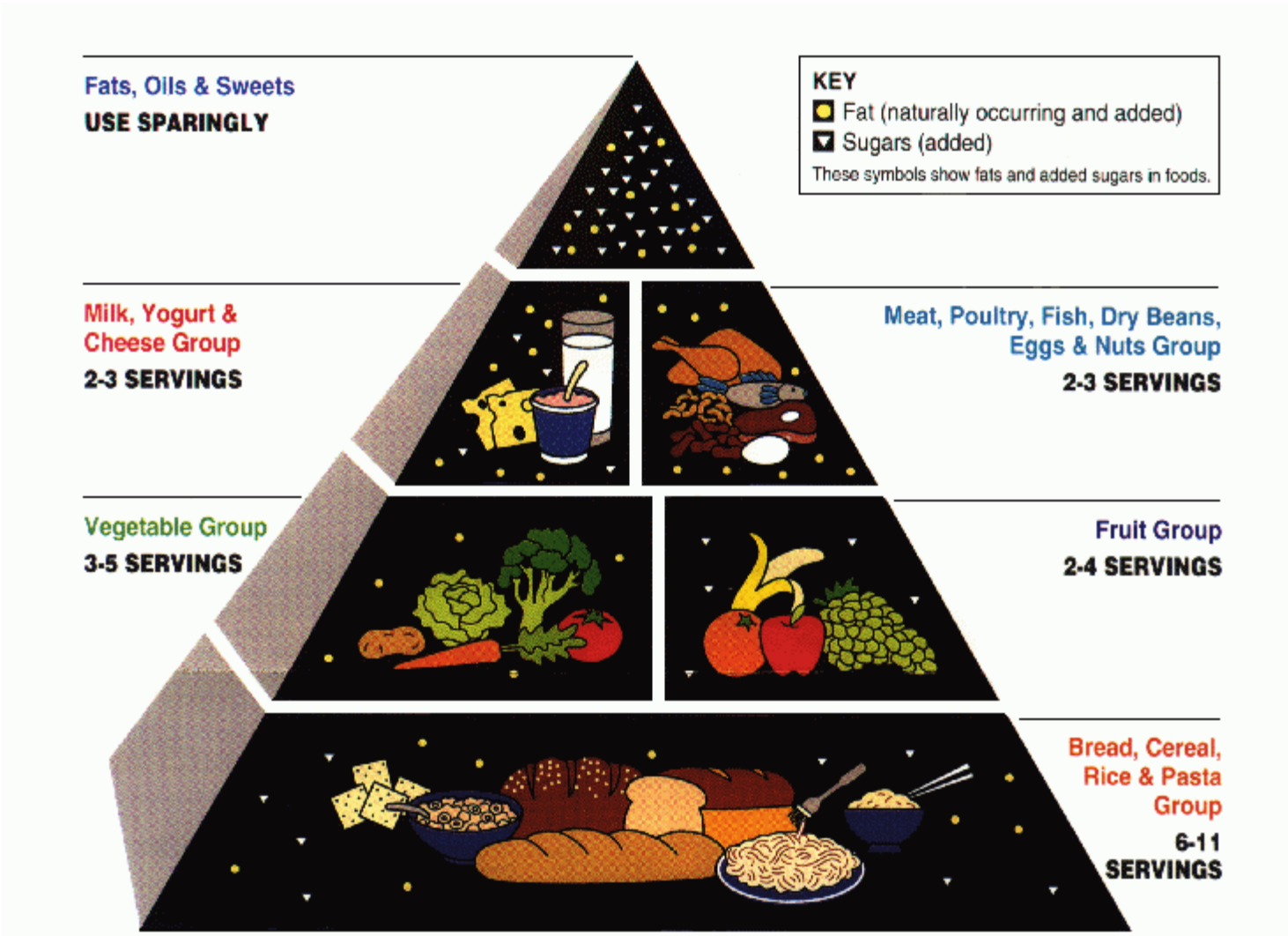
- Obese
- New to training
- Deconditioned Lifters
- Anabolic steroids

Let’s Talk DIET!

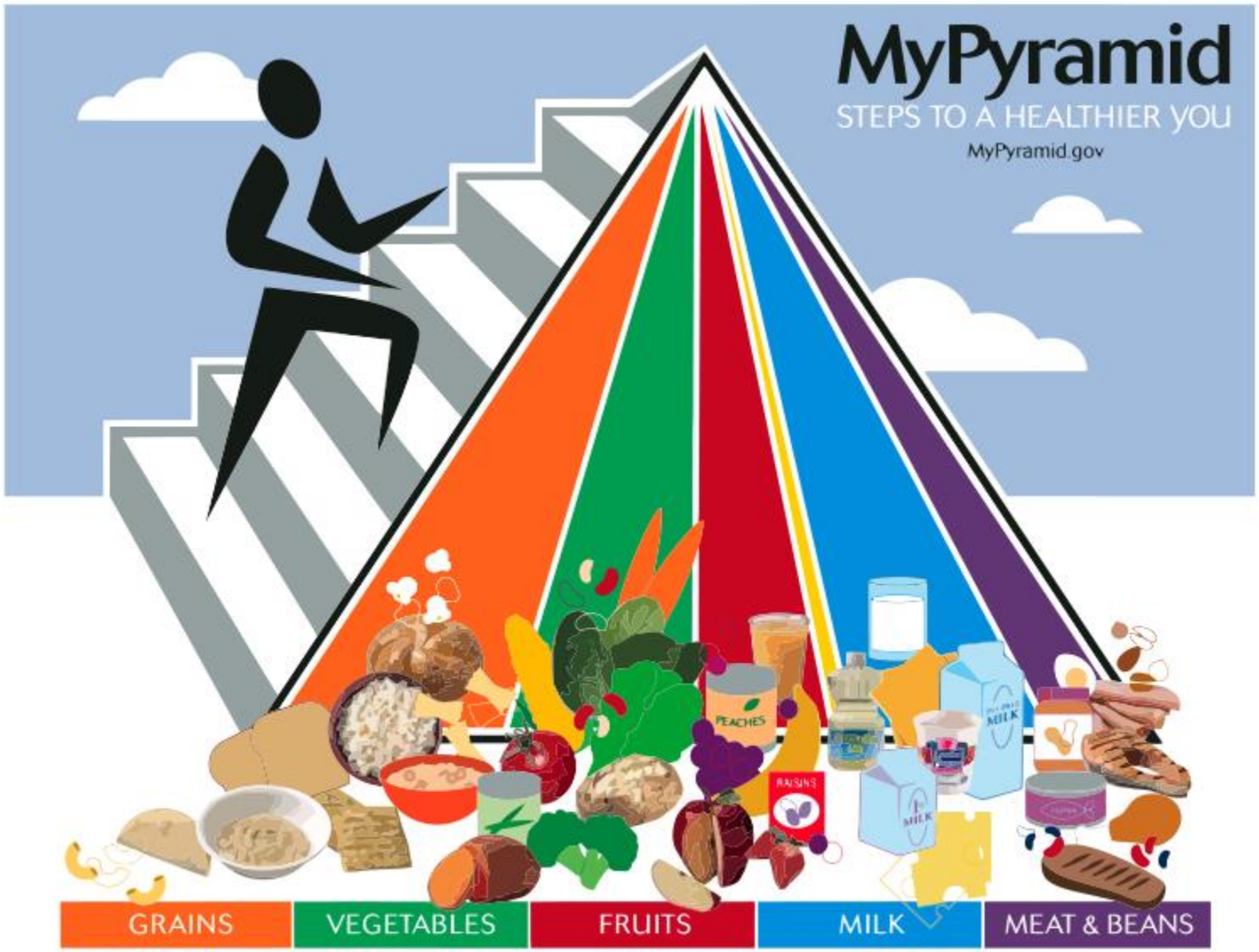
1943


For Health...eat some food from each group...every day!
GROUP ONE
GREEN AND YELLOW VEGETABLES...
some raw—some cooked, frozen or canned
GROUP TWO
ORANGES, TOMATOES, GRAPEFRUIT...
or raw cabbage or salad greens
GROUP THREE
POTATOES AND OTHER VEGETABLES AND FRUITS
raw, dried, cooked, frozen or canned
GROUP FOUR
MILK AND MILK PRODUCTS...
fluid, evaporated, dried milk, or cheese
GROUP FIVE
MEAT, POULTRY, FISH, OR EGGS...
or dried beans, peas, nuts, or peanut butter
GROUP SIX
BREAD, FLOUR, AND CEREALS...
Natural whole grain—or enriched or restored
GROUP SEVEN
BUTTER AND FORTIFIED MARGARINE
(with added Vitamin A)
U.S. NEEDS US STRONG
EAT THE BASIC 7 EVERY DAY
U.S. GOVERNMENT CHART
IN ADDITION TO THE BASIC 7...
EAT ANY OTHER FOODS YOU WANT
U.S. DEPARTMENT OF AGRICULTURE

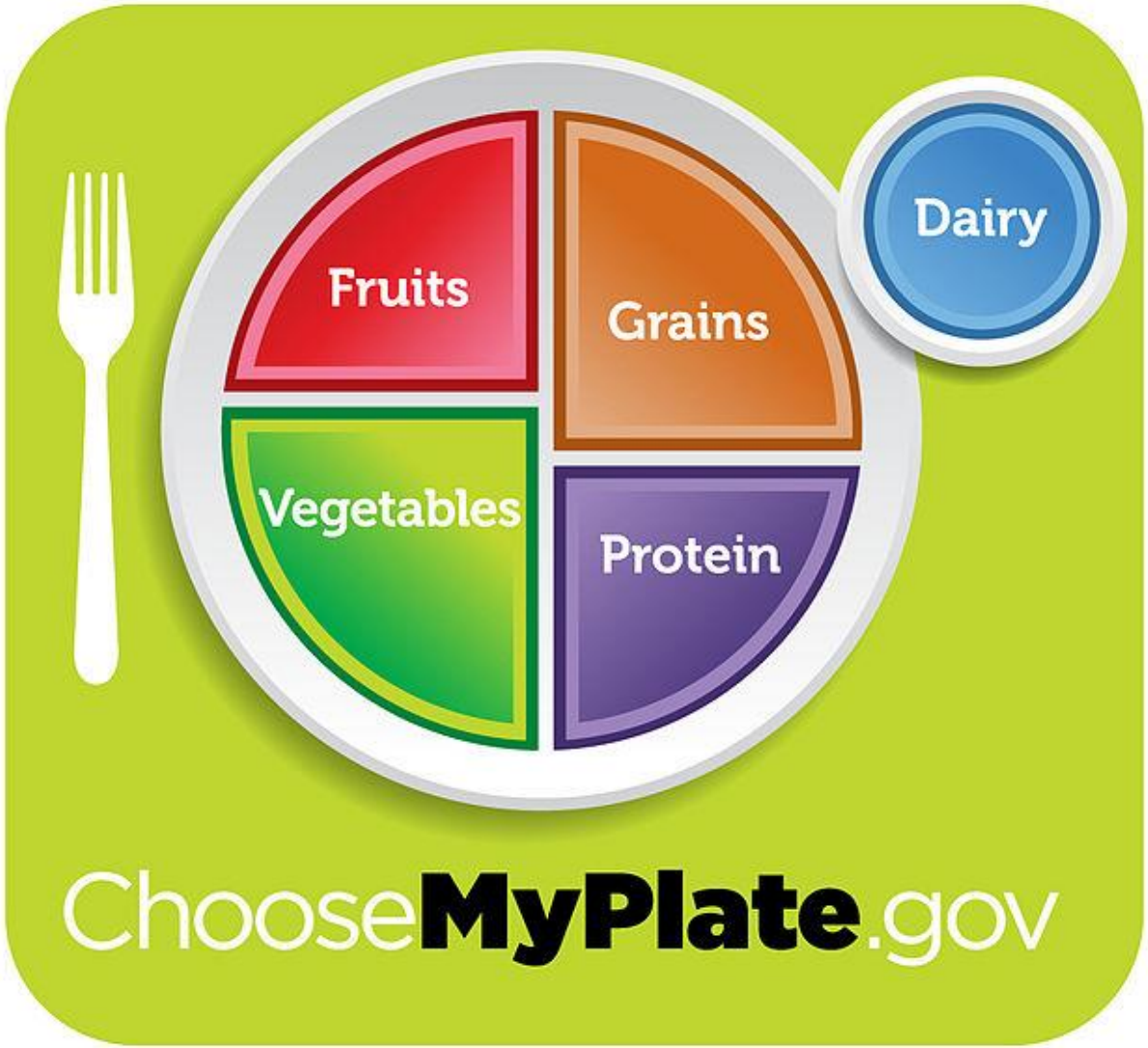
1992


Fats, Oils & Sweets
USE SPARINGLY
KEY
Fat (naturally occurring and added)
Sugars (added)
These symbols show fats and added sugars in foods.
Milk, Yogurt & Cheese Group
2-3 SERVINGS
Meat, Poultry, Fish, Dry Beans, Eggs & Nuts Group
2-3 SERVINGS
Vegetable Group
3-5 SERVINGS
Fruit Group
2-4 SERVINGS
Bread, Cereal, Rice & Pasta Group
6-11 SERVINGS

2005


MyPyramid
STEPS TO A HEALTHIER YOU
MyPyramid.gov
PEACHES
RAISINS
MILK
GRAINS
VEGETABLES
FRUITS
MILK
MEAT & BEANS

2010


Fruits
Grains
Dairy
Vegetables
Protein
ChooseMyPlate.gov

Previous Diets

- Portion control- Weight Watchers, Zone
- Prepared food- Nutrisystem, Jenny Craig
- Low Carb/High protein- Atkins, South Beach, Keto
- Liquid/Fad diets
- Mediterranean- most proven
- Raw- Paleo, Halleluiah, God, Caveman
- Glycemic Index Diet
- Intermittent fasting
- Elimination diets (TB12, Whole30)

All Diets Work (for some time)!

How Named Diets Work for Weight Loss

Diet Name	Short Description	How it Works
Low Carb	Eat fewer carbs and more foods rich in protein and fats	**By creating a caloric deficit**
Ketogenic	Eat almost no carbs, some protein and mostly fats	**By creating a caloric deficit**
Low Fat	Avoid foods high in fats and eat mostly protein and carbs	**By creating a caloric deficit**
Intermittent Fasting	Restrict your eating period to only a few hours every day	**By creating a caloric deficit**
Weight Watchers	Points based system to help with portion control	**By creating a caloric deficit**
Paleo	Eat only minimally-processed "paleolithic" foods	**By creating a caloric deficit**

Calorie Deficit

- Must be in a calorie deficit regardless of how you achieve it or what you call it
- Bruce/Leslie Diet

Ann Nutr Metab. 2007;51(5):428-32. Epub 2007 Nov 20.

Fat loss depends on energy deficit only, independently of the method for weight loss.

Strasser B[1], Spreitzer A, Haber P.

Author information

Abstract

BACKGROUND: This study was designed to compare the effects of 2 different but isocaloric fat reduction programs with the same amount of energy deficit - diet alone or diet combined with aerobic training - on body composition, lipid profile and cardiorespiratory fitness in non- or moderately obese women.

METHODS: Twenty non- or moderately obese (BMI 24.32 +/- 3.11) females (27.3 +/- 6.6 years) were tested at the beginning and after an 8-week period of a mild hypocaloric diet for the following parameters: (1) body mass and body fat; (2) total cholesterol, HDL-C, LDL-C and triglycerides; (3) lactate (millimol/liter) during submaximal exertion (100 W); (4) heart rate during submaximal exertion (100 W), and (5) maximum exercise performance (watt). Subjects were randomly divided into either a diet alone (D, -2,095 +/- 659 kJ/day) or a diet (-1,420 +/- 1,084 kJ/day) plus exercise (DE, three 60-min sessions per week at 60% of VO(2)max or -5,866 kJ/week) group.

RESULTS: Body mass and body fat decreased significantly in D (-1.95 +/- 1.13 kg or -1.47 +/- 0.87%; $p < 0.05$) and DE (-2.23 +/- 1.28 kg or -1.59 +/- 0.87%; $p < 0.05$), but there was no significant difference observed between the groups. Statistical analysis revealed no significant changes of total cholesterol, HDL-C, LDL-C, triglycerides and heart rate during submaximal exertion (100 W). Lactic acid accumulation during submaximal exertion (100 W) decreased significantly (-0.8 +/- 1.4 mmol/l, $p < 0.05$) in DE and increased significantly (+0.4 +/- 0.5 mmol/l, $p < 0.05$) in D. Maximum exercise performance improved significantly (+12.2 +/- 8.8 W, $p < 0.05$) in DE and did not change significantly in D.

CONCLUSIONS: This study showed that independently of the method for weight loss, the negative energy balance alone is responsible for weight reduction.

A randomized trial comparing low-fat and low-carbohydrate diets matched for energy and protein

C J Segal-Isaacson[1], Shannah Johnson, Vlad Tomuta, Brandy Cowell, Daniel T Stein
Affiliations
•PMID: 15601961
•DOI: 10.1038/oby.2004.278

Abstract

Several recent studies have found greater weight loss at 6 months among participants on a very-low-carbohydrate (VLC) weight-loss diet compared with a low-fat (LF) weight-loss diet. Because most of these studies were not matched for calories, it is not clear whether these results are caused by decreased energy intake or increased energy expenditure. It is hypothesized that several energy-consuming metabolic pathways are up-regulated during a VLC diet, leading to increased energy expenditure. The focus of this study was to investigate whether, when protein and energy are held constant, there is a significant difference in fat and weight loss when fat and carbohydrate are dramatically varied in the diet. The preliminary results presented in this paper are for the first four of six postmenopausal overweight or obese participants who followed, in random order, both a VLC and an LF diet for 6 weeks. Other outcome measures were serum lipids, glucose, and insulin, as well as dietary compliance and side effects. Our results showed no significant weight loss, lipid, serum insulin, or glucose differences between the two diets. Lipids were dramatically reduced on both diets, with a trend for greater triglyceride reduction on the VLC diet. Glucose levels were also reduced on both diets, with a trend for insulin reduction on the VLC diet. Compliance was excellent with both diets, and side effects were mild, although participants reported more food cravings and bad breath on the VLC diet and more burping and flatulence on the LF diet.

https://pubmed.ncbi.nlm.nih.gov/15601961/

If you keep calories and protein the same, it makes no difference if you eat a very low carb or low fat diet, you will still lose the same amount of weight.

Randomized Controlled Trial > JAMA. 2018 Feb 20;319(7):667-679. doi: 10.1001/jama.2018.0245.

Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion: The DIETFITS Randomized Clinical Trial

Christopher D Gardner [1], John F Trepanowski [1], Liana C Del Gobbo [1], Michelle E Hauser [1], Joseph Rigdon [2], John P A Ioannidis [1 3 4 5], Manisha Desai [2 3 4 5], Abby C King [1 3]

Affiliations + expand

PMID: 29466592 PMCID: PMC5839290 DOI: 10.1001/jama.2018.0245

Free PMC article

Importance: Dietary modification remains key to successful weight loss. Yet, no one dietary strategy is consistently superior to others for the general population. Previous research suggests genotype or insulin-glucose dynamics may modify the effects of diets.

Objective: To determine the effect of a healthy low-fat (HLF) diet vs a healthy low-carbohydrate (HLC) diet on weight change and if genotype pattern or insulin secretion are related to the dietary effects on weight loss.

Design, setting, and participants: The Diet Intervention Examining The Factors Interacting with Treatment Success (DIETFITS) randomized clinical trial included 609 adults aged 18 to 50 years without diabetes with a body mass index between 28 and 40. The trial enrollment was from January 29, 2013, through April 14, 2015; the date of final follow-up was May 16, 2016. Participants were randomized to the 12-month HLF or HLC diet. The study also tested whether 3 single-nucleotide polymorphism multilocus genotype responsiveness patterns or insulin secretion (INS-30; blood concentration of insulin 30 minutes after a glucose challenge) were associated with weight loss.

Interventions: Health educators delivered the behavior modification intervention to HLF (n = 305) and HLC (n = 304) participants via 22 diet-specific small group sessions administered over 12 months. The sessions focused on ways to achieve the lowest fat or carbohydrate intake that could be maintained long-term and emphasized diet quality.

Main outcomes and measures: Primary outcome was 12-month weight change and determination of whether there were significant interactions among diet type and genotype pattern, diet and insulin secretion, and diet and weight loss.

Results: Among 609 participants randomized (mean age, 40 [SD, 7] years; 57% women; mean body mass index, 33 [SD, 3]; 244 [40%] had a low-fat genotype; 180 [30%] had a low-carbohydrate genotype; mean baseline INS-30, 93 µIU/mL), 481 (79%) completed the trial. In the HLF vs HLC diets, respectively, the mean 12-month macronutrient distributions were 48% vs 30% for carbohydrates, 29% vs 45% for fat, and 21% vs 23% for protein. Weight change at 12 months was -5.3 kg for the HLF diet vs -6.0 kg for the HLC diet (mean between-group difference, 0.7 kg [95% CI, -0.2 to 1.6 kg]). There was no significant diet-genotype pattern interaction (P = .20) or diet-insulin secretion (INS-30) interaction (P = .47) with 12-month weight loss. There were 18 adverse events or serious adverse events that were evenly distributed across the 2 diet groups.

Conclusions and relevance: In this 12-month weight loss diet study, there was no significant difference in weight change between a healthy low-fat diet vs a healthy low-carbohydrate diet, and neither genotype pattern nor baseline insulin secretion was associated with the dietary effects on weight loss. In the context of these 2 common weight loss diet approaches, neither of the 2 hypothesized predisposing factors was helpful in identifying which diet was better for whom.

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K-State Research and Extension newsletter
The Collegian

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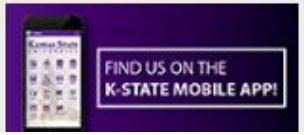

May 31, 2016

Mark Haub named department head of food, nutrition, dietetics and health

Submitted by Anne Rubash

Mark Haub, professor, has accepted the position of head of the food, nutrition, dietetics and health department in the College of Human Ecology. Haub was selected after a nationwide search and previously served as the interim department head.

"I look forward to working with my faculty and staff to advance our mission, educate students and Kansans, and conduct quality research," Haub said. "I am truly pleased with what we accomplished this past year with the great people we have working together to strengthen our department and I am eager for the work we have ahead of us."

?

Twinkie Diet

- Head of Nutrition at Kansas University
- Dr. Mark Haub, PhD
- 10 Weeks, 1800 Calories/day, 100g Protein/day
- Lost 27 Pounds eating “junk” (Twinkies, Oreos, Doritos, Little Debbie Snack Cakes, etc)
- 20% reduction in LDL, HDL up 20%, TGs down 39%
- All inflammatory markers improved (hsCRP, IL-1, IL-6, Uric acid, etc.)

N Engl J Med. Author manuscript; available in PMC 2009 Oct 19.
Published in final edited form as:
N Engl J Med. 2009 Feb 26; 360(9): 859–873.
doi: 10.1056/NEJMoa0804748
PMCID: PMC2763382
NIHMSID: NIHMS138139
PMID: 19246357

Comparison of Weight-Loss Diets with Different Compositions of Fat, Protein, and Carbohydrates

Frank M. Sacks, M.D.,[1,2] George A. Bray, M.D.,[5] Vincent J. Carey, Ph.D.,[2] Steven R. Smith, M.D.,[5] Donna H. Ryan, M.D.,[5] Stephen D. Anton, Ph.D.,[5] Katherine McManus, M.S., R.D.,[4] Catherine M. Champagne, Ph.D.,[5] Louise M. Bishop, M.S., R.D.,[1] Nancy Laranjo, B.A.,[2] Meryl S. Leboff, M.D.,[3] Jennifer C. Rood, Ph.D.,[5] Lilian de Jonge, Ph.D.,[5] Frank L. Greenway, M.D.,[5] Catherine M. Loria, Ph.D.,[6] Eva Obarzanek, Ph.D.,[6] and Donald A. Williamson, Ph.D.[5]
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The publisher's final edited version of this article is available at N Engl J Med

Associated Data
Supplementary Materials

Abstract

BACKGROUND
The possible advantage for weight loss of a diet that emphasizes protein, fat, or carbohydrates has not been established, and there are few studies that extend beyond 1 year.

METHODS
We randomly assigned 811 overweight adults to one of four diets; the targeted percentages of energy derived from fat, protein, and carbohydrates in the four diets were 20, 15, and 65%; 20, 25, and 55%; 40, 15, and 45%; and 40, 25, and 35%. The diets consisted of similar foods and met guidelines for cardiovascular health. The participants were offered group and individual instructional sessions for 2 years. The primary outcome was the change in body weight after 2 years in two-by-two factorial comparisons of low fat versus high fat and average protein versus high protein and in the comparison of highest and lowest carbohydrate content.

RESULTS
At 6 months, participants assigned to each diet had lost an average of 6 kg, which represented 7% of their initial weight; they began to regain weight after 12 months. By 2 years, weight loss remained similar in those who were assigned to a diet with 15% protein and those assigned to a diet with 25% protein (3.0 and 3.6 kg, respectively); in those assigned to a diet with 20% fat and those assigned to a diet with 40% fat (3.3 kg for both groups); and in those assigned to a diet with 65% carbohydrates and those assigned to a diet with 35% carbohydrates (2.9 and 3.4 kg, respectively) (P>0.20 for all comparisons). Among the 80% of participants who completed the trial, the average weight loss was 4 kg; 14 to 15% of the participants had a reduction of at least 10% of their initial body weight. Satiety, hunger, satisfaction with the diet, and attendance at group sessions were similar for all diets; attendance was strongly associated with weight loss (0.2 kg per session attended). The diets improved lipid-related risk factors and fasting insulin levels.

CONCLUSIONS
Reduced-calorie diets result in clinically meaningful weight loss regardless of which macronutrients they emphasize.

Diets vs. Combinations of Fat, Protein, and Carbohydrates

Roush, Karen MSN, RN, FNP-BC

AJN, American Journal of Nursing: November 2009 - Volume 109 - Issue 11 - p 64
doi: 10.1097/01.NAJ.0000363356.61507.fc

Abstract

The specific composition of macronutrients (fat, protein, or carbohydrate) in diets isn't important for cardiovascular risk reduction, as long as the diet is effective in causing weight loss.

Nurses counseling patients on weight loss should help to design a reduced-energy diet that meets personal preferences. Engaging patients in a weight-loss support group may enhance the effectiveness of the diet.

Very low-carbohydrate versus isocaloric high-carbohydrate diet in dietary obese rats

Kathleen V Axen [1], Kenneth Axen

PMID: 16988076 DOI: 10.1038/oby.2006.152

Objective: The effects of a very low-carbohydrate (VLC), high-fat (HF) dietary regimen on metabolic syndrome were compared with those of an isocaloric high-carbohydrate (HC), low-fat (LF) regimen in dietary obese rats.

Research methods and procedures: Male Sprague-Dawley rats, made obese by 8 weeks ad libitum consumption of an HF diet, developed features of the metabolic syndrome vs. lean control (C) rats, including greater visceral, subcutaneous, and hepatic fat masses, elevated plasma cholesterol levels, impaired glucose tolerance, and fasting and post-load insulin resistance. Half of the obese rats (VLC) were then fed a popular VLC-HF diet (Weeks 9 and 10 at 5% and Weeks 11 to 14 at 15% carbohydrate), and one-half (HC) were pair-fed an HC-LF diet (Weeks 9 to 14 at 60% carbohydrate).

Results: Energy intakes of pair-fed VLC and HC rats were less than C rats throughout Weeks 9 to 14. Compared with HC rats, VLC rats exhibited impaired insulin and glycemic responses to an intraperitoneal glucose load at Week 10 and lower plasma triacylglycerol levels but retarded loss of hepatic, retroperitoneal, and total body fat at Week 14. VLC, HC, and C rats no longer differed in body weight, plasma cholesterol, glucose tolerance, or fasting insulin resistance at Week 14. Progressive decreases in fasting insulin resistance in obese groups paralleled concomitant reductions in hepatic, retroperitoneal, and total body fat.

Discussion: When energy intake was matched, the VLC-HF diet provided no advantage in weight loss or in improving those components of the metabolic syndrome induced by dietary obesity and may delay loss of hepatic and visceral fat as compared with an HC-LF diet.

https://pubmed.ncbi.nlm.nih.gov/16988076/

No difference in body weight decrease between a low-glycemic-index and a high-glycemic-index diet but reduced LDL cholesterol after 10-wk ad libitum intake of the low-glycemic-index diet

Birgitte Sloth[1], Inger Krog-Mikkelsen, Anne Flint, Inge Tetens, Inger Björck, Sophie Vinoy, Helena Elmståhl, Arne Astrup, Vincent Lang, Anne Raben
Affiliations
•PMID: 15277154
•DOI: 10.1093/ajcn/80.2.337

Abstract

Background: The role of glycemic index (GI) in appetite and body-weight regulation is still not clear.
Objective: The objective of the study was to investigate the long-term effects of a low-fat, high-carbohydrate diet with either low glycemic index (LGI) or high glycemic index (HGI) on ad libitum energy intake, body weight, and composition, as well as on risk factors for type 2 diabetes and ischemic heart disease in overweight healthy subjects.

Design: The study was a 10-wk parallel, randomized, intervention trial with 2 matched groups. The LGI or HGI test foods, given as replacements for the subjects' usual carbohydrate-rich foods, were equal in total energy, energy density, dietary fiber, and macronutrient composition. Subjects were 45 (LGI diet: n = 23; HGI diet: n = 22) healthy overweight [body mass index (in kg/m(2)): 27.6 +/- 0.2] women aged 20-40 y.

Results: Energy intake, mean (+/- SEM) body weight (LGI diet: -1.9 +/- 0.5 kg; HGI diet: -1.3 +/- 0.3 kg), and fat mass (LGI diet: -1.0 +/- 0.4 kg; HGI diet: -0.4 +/- 0.3 kg) decreased over time, but the differences between groups were not significant. No significant differences were observed between groups in fasting serum insulin, homeostasis model assessment for relative insulin resistance, homeostasis model assessment for beta cell function, triacylglycerol, nonesterified fatty acids, or HDL cholesterol. However, a 10% decrease in LDL cholesterol ($P < 0.05$) and a tendency to a larger decrease in total cholesterol ($P = 0.06$) were observed with consumption of the LGI diet as compared with the HGI diet.

Conclusions: This study does not support the contention that low-fat LGI diets are more beneficial than HGI diets with regard to appetite or body-weight regulation as evaluated over 10 wk. However, it confirms previous findings of a beneficial effect of LGI diets on risk factors for ischemic heart disease.

Glycemic Index

- High: white sugar, white bread, beer, baked potato, sugary drinks, pasta, rice
- Low: non-starchy vegetables; broccoli, asparagus, spinach, celery, parsley, lettuce, kale, apples, strawberries, blueberries, oranges, cucumbers
- Medium: multigrain, pita, and rye bread, brown and wild rice, certain fruits

No effect of a diet with a reduced glycaemic index on satiety, energy intake and body weight in overweight and obese women

L M Aston[1], C S Stokes, S A Jebb
Affiliations
•PMID: 17923862
•PMCID: PMC2699494
•DOI: 10.1038/sj.ijo.0803717
Free PMC article

Abstract

Objective: To investigate whether a diet with a reduced glycaemic index (GI) has effects on appetite, energy intake, body weight and composition in overweight and obese female subjects.

Design: Randomized crossover intervention study including two consecutive 12-week periods. Lower or higher GI versions of key carbohydrate-rich foods (breads, breakfast cereals, rice and pasta/potatoes) were provided to subjects to be incorporated into habitual diets in ad libitum quantities. Foods intended as equivalents to each other were balanced in macronutrient composition, fibre content and energy density.
Subjects: Nineteen overweight and obese women, weight-stable, with moderate hyperinsulinaemia (age: 34-65 years, body mass index: 25-47 kg m(-2), fasting insulin: 49-156 pmol l(-1)).

Measurements: Dietary intake, body weight and composition after each 12-week intervention. Subjectively rated appetite and short-term ad libitum energy intake at a snack and lunch meal following fixed lower and higher GI test breakfasts (GI 52 vs 64) in a laboratory setting.

Results: Free-living diets differed in GI by 8.4 units (55.5 vs 63.9), with key foods providing 48% of carbohydrate intake during both periods. There were no differences in energy intake, body weight or body composition between treatments. On laboratory investigation days, there were no differences in subjective ratings of hunger or fullness, or in energy intake at the snack or lunch meal.

Conclusion: This study provides no evidence to support an effect of a reduced GI diet on satiety, energy intake or body weight in overweight/obese women. Claims that the GI of the diet per se may have specific effects on body weight may therefore be misleading.

Ketogenic low-carbohydrate diets have no metabolic advantage over nonketogenic low-carbohydrate diets

Carol S Johnston [1], Sherrie L Tjonn, Pamela D Swan, Andrea White, Heather Hutchins, Barry Sears
•PMID: 16685046
•DOI: 10.1093/ajcn/83.5.1055

Background: Low-carbohydrate diets may promote greater weight loss than does the conventional low-fat, high-carbohydrate diet.

Objective: We compared weight loss and biomarker change in adults adhering to a ketogenic low-carbohydrate (KLC) diet or a nonketogenic low-carbohydrate (NLC) diet.

Design: Twenty adults [body mass index (in kg/m(2)): 34.4 +/- 1.0] were randomly assigned to the KLC (60% of energy as fat, beginning with approximately 5% of energy as carbohydrate) or NLC (30% of energy as fat; approximately 40% of energy as carbohydrate) diet. During the 6-wk trial, participants were sedentary, and 24-h intakes were strictly controlled.

Results: Mean (+/-SE) weight losses (6.3 +/- 0.6 and 7.2 +/- 0.8 kg in KLC and NLC dieters, respectively; P = 0.324) and fat losses (3.4 and 5.5 kg in KLC and NLC dieters, respectively; P = 0.111) did not differ significantly by group after 6 wk. Blood beta-hydroxybutyrate in the KLC dieters was 3.6 times that in the NLC dieters at week 2 (P = 0.018), and LDL cholesterol was directly correlated with blood beta-hydroxybutyrate (r = 0.297, P = 0.025). Overall, insulin sensitivity and resting energy expenditure increased and serum gamma-glutamyltransferase concentrations decreased in both diet groups during the 6-wk trial (P < 0.05). However, inflammatory risk (arachidonic acid:eicosapentaenoic acid ratios in plasma phospholipids) and perceptions of vigor were more adversely affected by the KLC than by the NLC diet.

Conclusions: KLC and NLC diets were equally effective in reducing body weight and insulin resistance, but the KLC diet was associated with several adverse metabolic and emotional effects. The use of ketogenic diets for weight loss is not warranted.

No significant difference in weight loss or insulin resistance. Low fat keto caused several adverse metabolic and emotional effects.

Do the commercial programs work? Or just cost a lot of money?

Ann Intern Med. 2005 Jan 4;142(1):56-66.

Systematic review: an evaluation of major commercial weight loss programs in the United States.

Tsai AG[1], Wadden TA.

Author information

Abstract

BACKGROUND: Each year millions of Americans enroll in commercial and self-help weight loss programs. Health care providers and their obese patients know little about these programs because of the absence of systematic reviews.

PURPOSE: To describe the components, costs, and efficacy of the major commercial and organized self-help weight loss programs in the United States that provide structured in-person or online counseling.

DATA SOURCES: Review of company Web sites, telephone discussion with company representatives, and search of the MEDLINE database.

STUDY SELECTION: Randomized trials at least 12 weeks in duration that enrolled only adults and assessed interventions as they are usually provided to the public, or case series that met these criteria, stated the number of enrollees, and included a follow-up evaluation that lasted 1 year or longer.

DATA EXTRACTION: Data were extracted on study design, attrition, weight loss, duration of follow-up, and maintenance of weight loss.

DATA SYNTHESIS: We found studies of eDiets.com, Health Management Resources, Take Off Pounds Sensibly, OPTIFAST, and Weight Watchers. Of 3 randomized, controlled trials of Weight Watchers, the largest reported a loss of 3.2% of initial weight at 2 years. One randomized trial and several case series of medically supervised very-low-calorie diet programs found that patients who completed treatment lost approximately 15% to 25% of initial weight. These programs were associated with high costs, high attrition rates, and a high probability of regaining 50% or more of lost weight in 1 to 2 years. Commercial interventions available over the Internet and organized self-help programs produced minimal weight loss.

LIMITATIONS: Because many studies did not control for high attrition rates, the reported results are probably a best-case scenario.

CONCLUSIONS: With the exception of 1 trial of Weight Watchers, the evidence to support the use of the major commercial and self-help weight loss programs is suboptimal. Controlled trials are needed to assess the efficacy and cost-effectiveness of these interventions.

Comment in

There is insufficient evidence about the efficacy of commercial weight loss programmes. Commentary. [Evid Based Cardiovasc Med. 2005]
Commercial weight loss programs. [Ann Intern Med. 2005]
Review: little evidence supports the efficacy of major commercial and organised self help weight loss programmes. [Evid Based Nurs. 2005]
Review: little evidence supports the efficacy of major commercial and organized self-help weight loss programs. [ACP J Club. 2005]

Summary for patients in

Ann Intern Med. 2005 Jan 4;142(1):I42.

PMID: 15630109 [PubMed - indexed for MEDLINE]

Do dietary supplements and alternative medicine work?

South Med J. 2014 Jul;107(7):410-5. doi: 10.14423/SMJ.0000000000000130.

Comparison of traditional and nontraditional weight loss methods: an analysis of the national health and nutrition examination survey.

Post RE, Johnson SP, Wright RU, Mainous AG 3rd.

Author information

Abstract

OBJECTIVES: To evaluate the real-world use of various weight loss techniques and to compare the effectiveness of nontraditional methods with diet and exercise in helping nongeriatric adults lose weight.

METHODS: A cross-sectional analysis of the 2005-2010 National Health and Nutrition Examination Survey was performed. Adult, nonpregnant participants aged 20 to 65 years with a body mass index of ≥ 18.5 who tried to lose weight in the previous year were analyzed (weighted n = 53,570,979). Outcome measures included the proportion of patients who used nontraditional weight loss methods and a comparison of weight loss between those who used diet and exercise and those who used nontraditional methods.

RESULTS: During the previous year, 56.9% (95% confidence interval 54.5-59.4) of participants used nontraditional methods (nonexclusive of diet and exercise) as their attempted weight loss methods. Overall, individuals gained a mean (standard error) of 4.9 (0.3) lb in the 12 months preceding the National Health and Nutrition Examination Survey questionnaire. Only 19.6% (95% confidence interval 18.0-21.2) of the sample lost weight within the previous 12 months. Those who used nontraditional methods gained more weight during the previous year than those who used diet and exercise only (for body mass index ≥ 18.5, 5.5 vs 3.5 lb; $P < 0.01$) in the overall sample, but there was no difference in the obese subgroup.

CONCLUSIONS: Physicians need to reaffirm that diet and exercise are better methods for weight loss, and they need to advise their patients to avoid other methods when attempting to lose weight because they do not enhance weight loss attempts.

Comment in

Commentary on "comparison of traditional and nontraditional weight loss methods: an analysis of the national health and nutrition examination survey". [South Med J. 2014]

PMID: 25010580 [PubMed - indexed for MEDLINE]

Healthiest Diet?

BMC Med. 2014 Jul 24;12:112. doi: 10.1186/1741-7015-12-112.

Definitions and potential health benefits of the Mediterranean diet: views from experts around the world.

Trichopoulou A[1], Martínez-González MA, Tong TY, Forouhi NG, Khandelwal S, Prabhakaran D, Mozaffarian D, de Lorgeril M.

Author information

Abstract

The Mediterranean diet has been linked to a number of health benefits, including reduced mortality risk and lower incidence of cardiovascular disease. Definitions of the Mediterranean diet vary across some settings, and scores are increasingly being employed to define Mediterranean diet adherence in epidemiological studies. Some components of the Mediterranean diet overlap with other healthy dietary patterns, whereas other aspects are unique to the Mediterranean diet. In this forum article, we asked clinicians and researchers with an interest in the effect of diet on health to describe what constitutes a Mediterranean diet in different geographical settings, and how we can study the health benefits of this dietary pattern.

Curr Atheroscler Rep. 2013 Dec;15(12):370. doi: 10.1007/s11883-013-0370-4.

Mediterranean diet and cardiovascular disease: historical perspective and latest evidence.

de Lorgeril M.

Author information

Abstract

The concept that the Mediterranean diet was associated with a lower incidence of cardiovascular disease (CVD) was first proposed in the 1950s. Since then, there have been randomized controlled trials and large epidemiological studies that reported associations with lower CVD: in 1994 and 1999, the reports of the intermediate and final analyses of the trial Lyon Diet Heart Study; in 2003, a major epidemiological study in Greece showing a strong inverse association between a Mediterranean score and the risk of cardiovascular complications; in 2011-2012, several reports showing that even non-Mediterranean populations can gain benefits from long-term adhesion to the Mediterranean diet; and in 2013, the PREDIMED trial showing a significant risk reduction in a low-risk population. Contrary to the pharmacological approach of cardiovascular prevention, the adoption of the Mediterranean diet has been associated with a significant reduction in new cancers and overall mortality. Thus, in terms of evidence-based medicine, the full adoption of a modern version of the Mediterranean diet pattern can be considered one of the most effective approaches for the prevention of fatal and nonfatal CVD complications.

PMID: 24105622 [PubMed - indexed for MEDLINE]

Obes Res. 2004 Nov;12 Suppl 2:130S-40S.

A randomized trial comparing low-fat and low-carbohydrate diets matched for energy and protein.

Segal-Isaacson CJ[1], Johnson S, Tomuta V, Cowell B, Stein DT.

Author information

Abstract

Several recent studies have found greater weight loss at 6 months among participants on a very-low-carbohydrate (VLC) weight-loss diet compared with a low-fat (LF) weight-loss diet. Because most of these studies were not matched for calories, it is not clear whether these results are caused by decreased energy intake or increased energy expenditure. It is hypothesized that several energy-consuming metabolic pathways are up-regulated during a VLC diet, leading to increased energy expenditure. The focus of this study was to investigate whether, when protein and energy are held constant, there is a significant difference in fat and weight loss when fat and carbohydrate are dramatically varied in the diet. The preliminary results presented in this paper are for the first four of six postmenopausal overweight or obese participants who followed, in random order, both a VLC and an LF diet for 6 weeks. Other outcome measures were serum lipids, glucose, and insulin, as well as dietary compliance and side effects. Our results showed no significant weight loss, lipid, serum insulin, or glucose differences between the two diets. Lipids were dramatically reduced on both diets, with a trend for greater triglyceride reduction on the VLC diet. Glucose levels were also reduced on both diets, with a trend for insulin reduction on the VLC diet. Compliance was excellent with both diets, and side effects were mild, although participants reported more food cravings and bad breath on the VLC diet and more burping and flatulence on the LF diet.

PMID: 15601961 DOI: 10.1038/oby.2004.278

[Indexed for MEDLINE] **Free full text**

Cardiovascular Risk?

Changes in weight loss, body composition and cardiovascular disease risk after altering macronutrient distributions during a regular exercise program in obese women

Chad M Kerksick, Jennifer Wismann-Bunn, Donovan Fogt, Ashli R Thomas, Lem Taylor, Bill I Campbell, Colin D Wilborn, Travis Harvey, Mike D Roberts, Paul La Bounty, Melyn Galbreath, Brandon Marcello, Christopher J Rasmussen & Richard B Kreider

Background

This study's purpose investigated the impact of different macronutrient distributions and varying caloric intakes along with regular exercise for metabolic and physiological changes related to weight loss.

Methods

One hundred forty-one sedentary, obese women (38.7 ± 8.0 yrs, 163.3 ± 6.9 cm, 93.2 ± 16.5 kg, 35.0 ± 6.2 kg•m^{-2}, 44.8 ± 4.2% fat) were randomized to either no diet + no exercise control group (CON) a no diet + exercise control (ND), or one of four diet + exercise groups (high-energy diet [HED], very low carbohydrate, high protein diet [VLCHP], low carbohydrate, moderate protein diet [LCMP] and high carbohydrate, low protein [HCLP]) in addition to beginning a 3x•week^{-1} supervised resistance training program. After 0, 1, 10 and 14 weeks, all participants completed testing sessions which included anthropometric, body composition, energy expenditure, fasting blood samples, aerobic and muscular fitness assessments. Data were analyzed using repeated measures ANOVA with an alpha of 0.05 with LSD post-hoc analysis when appropriate.

Results

All dieting groups exhibited adequate compliance to their prescribed diet regimen as energy and macronutrient amounts and distributions were close to prescribed amounts. Those groups that followed a diet and exercise program reported significantly greater anthropometric (waist circumference and body mass) and body composition via DXA (fat mass and % fat) changes. Caloric restriction initially reduced energy expenditure, but successfully returned to baseline values after 10 weeks of dieting and exercising. Significant fitness improvements (aerobic capacity and maximal strength) occurred in all exercising groups. No significant changes occurred in lipid panel constituents, but serum insulin and HOMA-IR values decreased in the VLCHP group. Significant reductions in serum leptin occurred in all caloric restriction + exercise groups after 14 weeks, which were unchanged in other non-diet/non-exercise groups.

Conclusions

Overall and over the entire test period, all diet groups which restricted their caloric intake and exercised experienced similar responses to each other. Regular exercise and modest caloric restriction successfully promoted anthropometric and body composition improvements along with various markers of muscular fitness. Significant increases in relative energy expenditure and reductions in circulating leptin were found in response to all exercise and diet groups. Macronutrient distribution may impact circulating levels of insulin and overall ability to improve strength levels in obese women who follow regular exercise.

Regardless of what macronutrient breakdown you use, if you are losing weight, all of your cardiovascular risk factors improve

Anti Inflammatory Diet?

Published in final edited form as:
Int J Cardiol. 2020 January 15; 299: 282–288. doi:10.1016/j.ijcard.2019.07.102.

Healthy diet reduces markers of cardiac injury and inflammation regardless of macronutrients: results from the OmniHeart trial

Lara C. Kovell, MD[1], Edwina H. Yeung, PhD[2], Edgar R. Miller III, MD, PhD[3], Lawrence J. Appel, MD, MPH[4], Robert H. Christenson, PhD[5], Heather Rebuck, MS[6], Steven P. Schulman, MD[7], Stephen P. Juraschek, MD, PhD[8]

[1]Division of Cardiology, University of Massachusetts Medical School, Worcester, MA. This author takes responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussion interpretation;

Abstract

Background: Despite diet being a first-line strategy for preventing cardiovascular disease, the optimal macronutrient profile remains unclear. We studied the effects of macronutrient profile on subclinical cardiovascular injury and inflammation.

Methods: OmniHeart was a randomized 3-period, crossover feeding study in 164 adults with high blood pressure or hypertension (SBP 120-159 or DBP 80-99 mm Hg). Participants were fed each of 3 diets (emphasizing carbohydrate (CARB), protein (PROT), or unsaturated fat (UNSAT)) for 6-weeks, with feeding periods separated by a washout period. Weight was held constant. Fasting serum was collected at baseline while participants ate their own diets and after each feeding period. High-sensitivity troponin I (hs-cTnI) and high-sensitivity C-reactive protein (hs-CRP) were measured in stored specimens.

Results: The average age was 53.6 years, 55% were African American, and 45% were women. At baseline, the median (25^{th}-percentile, 75^{th}-percentile) hs-cTnI was 3.3 ng/L (1.9, 5.6) and hs-CRP was 2.2 mg/L (1.1, 5.2). Compared to baseline, all 3 diets reduced hs-cTnI: CARB −8.6% (95%CI: −16.1, −0.4), PROT −10.8% (−18.4, −2.5), and UNSAT −9.4% (−17.4, −0.5). Hs-CRP was similarly changed by −13.9 to −17.0%. Hs-cTnI and hs-CRP reductions were of similar magnitudes as SBP and low-density lipoprotein cholesterol (LDLc) but were not associated with these risk-factor reductions (*P-values*=0.09). There were no between-diet differences in hs-cTnI and hs-CRP reductions.

Conclusions: Healthy diet, regardless of macronutrient emphasis, directly mitigated subclinical cardiac injury and inflammation in a population at risk for cardiovascular disease. These findings support dietary recommendations emphasizing healthy foods rather than any one macronutrient.

Isocaloric Diets High in Animal or Plant Protein Reduce Liver Fat and Inflammation in Individuals With Type 2 Diabetes

Mariya Markova [1], Olga Pivovarova [2], Silke Hornemann [3], Stephanie Sucher [3], Turid Frahnow [3], Katrin Wegner [4], Jürgen Machann [5], Klaus Jürgen Petzke [6], Johannes Hierholzer [7], Ralf Lichtinghagen [8], Christian Herder [9], Maren Carstensen-Kirberg [9], Michael Roden [10], Natalia Rudovich [2], Susanne Klaus [6], Ralph Thomann [11], Rosemarie Schneeweiss [12], Sascha Rohn [13], Andreas F H Pfeiffer [2]

Affiliations

•PMID: 27765690

•DOI: 10.1053/j.gastro.2016.10.007

Abstract

Background & aims: Nonalcoholic fatty liver disease (NAFLD) is associated with increased risk of hepatic, cardiovascular, and metabolic diseases. High-protein diets, rich in methionine and branched chain amino acids (BCAAs), apparently reduce liver fat, but can induce insulin resistance. We investigated the effects of diets high in animal protein (AP) vs plant protein (PP), which differ in levels of methionine and BCAAs, in patients with type 2 diabetes and NAFLD. We examined levels of liver fat, lipogenic indices, markers of inflammation, serum levels of fibroblast growth factor 21 (FGF21), and activation of signaling pathways in adipose tissue.

Methods: We performed a prospective study of individuals with type 2 diabetes and NAFLD at a tertiary medical center in Germany from June 2013 through March 2015. We analyzed data from 37 subjects placed on a diet high in AP (rich in meat and dairy foods; n = 18) or PP (mainly legume protein; n = 19) without calorie restriction for 6 weeks. The diets were isocaloric with the same macronutrient composition (30% protein, 40% carbohydrates, and 30% fat). Participants were examined at the start of the study and after the 6-week diet period for body mass index, body composition, hip circumference, resting energy expenditure, and respiratory quotient. Body fat and intrahepatic fat were detected by magnetic resonance imaging and spectroscopy, respectively. Levels of glucose, insulin, liver enzymes, and inflammation markers, as well as individual free fatty acids and free amino acids, were measured in collected blood samples. Hyperinsulinemic euglycemic clamps were performed to determine whole-body insulin sensitivity. Subcutaneous adipose tissue samples were collected and analyzed for gene expression patterns and phosphorylation of signaling proteins.

Results: Postprandial levels of BCAAs and methionine were significantly higher in subjects on the AP vs the PP diet. The AP and PP diets each reduced liver fat by 36%-48% within 6 weeks (for AP diet P = .0002; for PP diet P = .001). These reductions were unrelated to change in body weight, but correlated with down-regulation of lipolysis and lipogenic indices. Serum level of FGF21 decreased by 50% in each group (for AP diet P < .0002; for PP diet P < .0002); decrease in FGF21 correlated with loss of hepatic fat. In gene expression analyses of adipose tissue, expression of the FGF21 receptor cofactor β-klotho was associated with reduced expression of genes encoding lipolytic and lipogenic proteins. In patients on each diet, levels of hepatic enzymes and markers of inflammation decreased, insulin sensitivity increased, and serum level of keratin 18 decreased.

Conclusions: In a prospective study of patients with type 2 diabetes, we found diets high in protein (either animal or plant) significantly reduced liver fat independently of body weight, and reduced markers of insulin resistance and hepatic necroinflammation. The diets appear to mediate these changes via lipolytic and lipogenic pathways in adipose tissue. Negative effects of BCAA or methionine were not detectable. FGF21 level appears to be a marker of metabolic improvement. ClinicalTrials.gov ID NCT02402985.

Keywords: FFA; KLB; NAFLD; NASH.

More Studies?

If you want to read more on inflammation, here's a few more links:

- Inflammation not different between ketogenic diet and low fat diet when calories are equated: https://pubmed.ncbi.nlm.nih.gov/12949361/

- Omega 3 PUFAs may decrease inflammation: https://journals.lww.com/md-journal/Fulltext/2017/02170/Impact_of_the_dietary_fatty_acid_intake_on.6.aspx

- Sugar intake does not increase inflammation in absence of weight gain: https://academic.oup.com/ajcn/article/82/2/421/4862989?login=true

Intermittent Fasting?

Meta-Analysis > Crit Rev Food Sci Nutr. 2021;61(8):1293-1304.
doi: 10.1080/10408398.2020.1757616. Epub 2020 May 2.

Impact of intermittent energy restriction on anthropometric outcomes and intermediate disease markers in patients with overweight and obesity: systematic review and meta-analyses

Lukas Schwingshackl [1], Jasmin Zähringer [1], Kai Nitschke [1], Gabriel Torbahn [2], Szimonetta Lohner [3], Tilman Kühn [4], Luigi Fontana [5 6], Nicola Veronese [7], Christine Schmucker [1], Joerg J Meerpohl [1 8]

Affiliations + expand

PMID: 32363896 DOI: 10.1080/10408398.2020.1757616

Abstract

This systematic review aims to investigate the effects of intermittent energy restriction (IER) on anthropometric outcomes and intermediate disease markers. A systematic literature search was conducted in three electronic databases. Randomized controlled trials (RCTs) were included if the intervention lasted ≥12 weeks and IER was compared with either continuous energy restriction (CER) or a usual diet. Random-effects meta-analysis was performed for eight outcomes. Certainty of evidence was assessed using GRADE. Seventeen RCTs with 1328 participants were included. IER in comparison to a usual diet may reduce body weight (mean difference [MD]: -4.83 kg, 95%-CI: -5.46, -4.21; *n* = 6 RCTs), waist circumference (MD: -1.73 cm, 95%-CI: -3.69, 0.24; *n* = 2), fat mass (MD: -2.54 kg, 95%-CI: -3.78, -1.31; *n* = 6), triacylglycerols (MD: -0.20 mmol/L, 95%-CI: -0.38, -0.03; *n* = 5) and systolic blood pressure (MD: -6.11 mmHg, 95%-CI: -9.59, -2.64; *n* = 5). No effects were observed for LDL-cholesterol, fasting glucose, and glycosylated-hemoglobin. Both, IER and CER have similar effect on body weight (MD: -0.55 kg, 95%-CI: -1.01, -0.09; *n* = 13), and fat mass (MD: -0.66 kg, 95%-CI: -1.14, -0.19; *n* = 10), and all other outcomes. In conclusion, IER improves anthropometric outcomes and intermediate disease markers when compared to a usual diet. The effects of IER on weight loss are similar to weight loss achieved by CER.

There was no difference in weight loss. There was however, more lean body mass loss in the IER group. This is a pattern we have seen in intermittent fasting studies.

https://pubmed.ncbi.nlm.nih.gov/32363896/

Front Cardiovasc Med. 2021 Oct 18;8:750714. doi: 10.3389/fcvm.2021.750714. eCollection 2021.

Effects of Intermittent Compared With Continuous Energy Restriction on Blood Pressure Control in Overweight and Obese Patients With Hypertension

Chao-Jie He [1], Ye-Ping Fei [1], Chun-Yan Zhu [2], Ming Yao [2], Gang Qian [1], Hui-Lin Hu [1], Chang-Lin Zhai [1]

Affiliations + expand

PMID: 34733895 PMCID: PMC8558476 DOI: 10.3389/fcvm.2021.750714

Free PMC article

Abstract

Background and Aims: Weight-loss diets reduce body weight and improve blood pressure control in hypertensive patients. Intermittent energy restriction (IER) is an alternative to continuous energy restriction (CER) for weight reduction. We aimed to compare the effects of IER with those of CER on blood pressure control and weight loss in overweight and obese patients with hypertension during a 6-month period. **Methods:** Two hundred and five overweight or obese participants (BMI 28.7 kg/m^2) with hypertension were randomized to IER (5:2 diet, a very-low-calorie diet for 2 days per week, 500 kcal/day for women and 600 kcal/day for men, along with 5 days of a habitual diet) compared to a moderate CER diet (1,000 kcal/day for women and 1,200 kcal/day for men) for 6 months. The primary outcomes of this study were changes in blood pressure and weight, and the secondary outcomes were changes in body composition, glycosylated hemoglobin A1c (HbA1c), and blood lipids. **Results:** Of the 205 randomized participants (118 women and 87 men; mean [SD] age, 50.2 [8.9] years; mean [SD] body mass index, 28.7 [2.6]; mean [SD] systolic blood pressure, 143 [10] mmHg; and mean [SD] diastolic blood pressure, 91 [9] mmHg), 173 completed the study. The intention-to-treat analysis demonstrated that IER and CER are equally effective for weight loss and blood pressure control: the mean (SEM) weight change with IER was -7.0 [0.6] kg vs. -6.8 [0.6] kg with CER, the mean (SEM) systolic blood pressure with IER was -7 [0.7] mmHg vs. -7 [0.6] mmHg with CER, and the mean (SEM) diastolic blood pressure with IER was -6 [0.5] mmHg vs. -5 [0.5] mmHg with CER, (diet by time P = 0.62, 0.39, and 0.41, respectively). There were favorable improvements in body composition, HbA1c, and blood lipid levels, with no differences between groups. Effects did not differ according to completer analysis. No severe hypoglycemia occurred in either group during the trial. **Conclusions:** Intermittent energy restriction is an effective alternative diet strategy for weight loss and blood pressure control and is comparable to CER in overweight and obese patients with hypertension. **Clinical Trial Registration:** http://www.chictr.org.cn, identifier: ChiCTR2000040468.

Another study from 2021 also looked at IER versus CER and also found no difference weight loss or other health markers. This study compared the 5:2 method of fasting, where you let participants eat whatever they want for 5 days, then have them fast for 2 days.

https://pubmed.ncbi.nlm.nih.gov/34733895/

Eating Disorders

› Eat Weight Disord. 2022 Aug 23;1-9. doi: 10.1007/s40519-022-01437-z. Online ahead of print.

Craving for carbs: food craving and disordered eating in low-carb dieters and its association with intermittent fasting

Maíra Stivaleti Colombarolli [1 2 3], Jônatas de Oliveira [4 5 6], Táki Athanássios Cordás [3 7]

Affiliations + expand

PMID: 35999438 PMCID: PMC9398050 DOI: 10.1007/s40519-022-01437-z

Free PMC article

Abstract

Studies point to positive outcomes in a diet with reduction of carbohydrates and that the associated practice of intermittent fasting (IF) might increase weight loss. Although dieting might be related to disordered eating, little evidence is available about the role of restrictive carbohydrates diets on disordered eating. This study aimed to explore if doing low-carb (LC) diets was related to disordered eating and if IF would increase these symptoms. The sample comprised university students (n = 682), with a mean age of 22 years old and average BMI of 23.6 kg/m^2 (SD = 4.3). Twenty-seven percent (n = 188) of respondents reported doing LC diet in the last three months. Of those, 31% (n = 58) reported doing LC diet combined with periods of IF. Mean scores were compared using parametric tests, and effects size and correlations between variables were calculated. Dieters showed higher levels of binge eating, food cravings, cognitive restraint, cognitive restraint toward carbohydrates when compared to non-dieters. The association of LC and IF was related to an increase in disordered eating, especially binge eating and food cravings, specifically 'Lack of control', 'Thoughts or preoccupation with food,' and 'Guilt from cravings and/or for giving in to them'. These results provide evidence that restrictive carbohydrate diets and IF may increase cognitive restraint and, consequently, food cravings.Level III: Evidence obtained from cohort or case-control analytic studies.

Keywords: Binge eating; Cognitive restraint; Disordered eating; Food craving; Low-carb diet.

Seed Oils?

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Biomarkers of Dietary Omega-6 Fatty Acids and Incident Cardiovascular Disease and Mortality

An Individual-Level Pooled Analysis of 30 Cohort Studies

Matti Marklund, Jason H.Y. Wu, Fumiaki Imamura, Liana C. Del Gobbo, Amanda Fretts, Janette de Goede, Peilin Shi, Nathan Tintle, Maria Wennberg, Stella Aslibekyan, Tzu-An Chen, Marcia C. de Oliveira Otto, Yoichiro Hirakawa, Helle Højmark Eriksen, Janine Kröger, Federica Laguzzi, Maria Lankinen, Rachel A. Murphy, Kiesha Prem, Cécilia Samieri, Jyrki Virtanen, ... See all authors

Originally published 11 Apr 2019 | https://doi.org/10.1161/CIRCULATIONAHA.118.038908 | Circulation. 2019;139:2422–2436

This article is commented on by the following:

Other version(s) of this article

Abstract

Background:

Global dietary recommendations for and cardiovascular effects of linoleic acid, the major dietary omega-6 fatty acid, and its major metabolite, arachidonic acid, remain controversial. To address this uncertainty and inform international recommendations, we evaluated how in vivo circulating and tissue levels of linoleic acid (LA) and arachidonic acid (AA) relate to incident cardiovascular disease (CVD) across multiple international studies.

Methods:

We performed harmonized, de novo, individual-level analyses in a global consortium of 30 prospective observational studies from 13 countries. Multivariable-adjusted associations of circulating and adipose tissue LA and AA biomarkers with incident total CVD and subtypes (coronary heart disease, ischemic stroke, cardiovascular mortality) were investigated according to a prespecified analytic plan. Levels of LA and AA, measured as the percentage of total fatty acids, were evaluated linearly according to their interquintile range (ie, the range between the midpoint of the first and fifth quintiles), and categorically by quintiles. Study-specific results were pooled using inverse-variance–weighted meta-analysis. Heterogeneity was explored by age, sex, race, diabetes mellitus, statin use, aspirin use, omega-3 levels, and fatty acid desaturase 1 genotype (when available).

"In pooled global analyses, higher in vivo circulating and tissue levels of LA and possibly AA were associated with lower risk of major cardiovascular events. These results support a favorable role for LA in CVD prevention."

https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.118.038908

https://pubmed.ncbi.nlm.nih.gov/24645297/
https://pubmed.ncbi.nlm.nih.gov/23464640/
https://pubmed.ncbi.nlm.nih.gov/28752873/
https://pubmed.ncbi.nlm.nih.gov/15576848/

Red Meat?

Review > Eur Heart J. 2017 Aug 21;38(32):2459-2472. doi: 10.1093/eurheartj/ehx144.

Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel

Brian A Ference [1], Henry N Ginsberg [2], Ian Graham [3], Kausik K Ray [4], Chris J Packard [5], Eric Bruckert [6], Robert A Hegele [7], Ronald M Krauss [8], Frederick J Raal [9], Heribert Schunkert [10 11], Gerald F Watts [12], Jan Borén [13], Sergio Fazio [14], Jay D Horton [15 16], Luis Masana [17], Stephen J Nicholls [18], Børge G Nordestgaard [19 20 21], Bart van de Sluis [22], Marja-Riitta Taskinen [23], Lale Tokgözoglu [24], Ulf Landmesser [2 6 25], Ulrich Laufs [26], Olov Wiklund [27 28], Jane K Stock [29], M John Chapman [30], Alberico L Catapano [31]

Affiliations + expand

PMID: 28444290 PMCID: PMC5837225 DOI: 10.1093/eurheartj/ehx144

Free PMC article

Abstract

Aims: To appraise the clinical and genetic evidence that low-density lipoproteins (LDLs) cause atherosclerotic cardiovascular disease (ASCVD).

Methods and results: We assessed whether the association between LDL and ASCVD fulfils the criteria for causality by evaluating the totality of evidence from genetic studies, prospective epidemiologic cohort studies, Mendelian randomization studies, and randomized trials of LDL-lowering therapies. In clinical studies, plasma LDL burden is usually estimated by determination of plasma LDL cholesterol level (LDL-C). Rare genetic mutations that cause reduced LDL receptor function lead to markedly higher LDL-C and a dose-dependent increase in the risk of ASCVD, whereas rare variants leading to lower LDL-C are associated with a correspondingly lower risk of ASCVD. Separate meta-analyses of over 200 prospective cohort studies, Mendelian randomization studies, and randomized trials including more than 2 million participants with over 20 million person-years of follow-up and over 150 000 cardiovascular events demonstrate a remarkably consistent dose-dependent log-linear association between the absolute magnitude of exposure of the vasculature to LDL-C and the risk of ASCVD; and this effect appears to increase with increasing duration of exposure to LDL-C. Both the naturally randomized genetic studies and the randomized intervention trials consistently demonstrate that any mechanism of lowering plasma LDL particle concentration should reduce the risk of ASCVD events proportional to the absolute reduction in LDL-C and the cumulative duration of exposure to lower LDL-C, provided that the achieved reduction in LDL-C is concordant with the reduction in LDL particle number and that there are no competing deleterious off-target effects.

Conclusion: Consistent evidence from numerous and multiple different types of clinical and genetic studies unequivocally establishes that LDL causes ASCVD.

Saturated Fat and LDL?

Conclusion: Consistent evidence from numerous and multiple different types of clinical and genetic studies unequivocally establishes that LDL causes ASCVD.

Review > Atherosclerosis. 2016 May;248:123-31. doi: 10.1016/j.atherosclerosis.2016.03.016. Epub 2016 Mar 15.

Total cholesterol as a risk factor for coronary heart disease and stroke in women compared with men: A systematic review and meta-analysis

Sanne A E Peters [1], Yankuba Singhateh [2], Diana Mackay [2], Rachel R Huxley [3], Mark Woodward [4]

Affiliations + expand

PMID: 27016614 DOI: 10.1016/j.atherosclerosis.2016.03.016

Abstract

Background: Raised total cholesterol is a strong risk factor for cardiovascular disease (CVD). It remains unknown whether sex differences exist in the relationship between total cholesterol and CVD outcomes.

Methods: PubMed was searched in December 2014 for cohort studies reporting on the relationship between total cholesterol and coronary heart disease (CHD) and total stroke, separately in men and women. Random effects meta-analyses with inverse variance weighting were used to obtain adjusted pooled sex-specific relative risks (RR) and women-to-men ratio of RRs (RRRs).

Results: Data from 97 cohorts, 1,022,276 individuals, and 20,176 CHD and 13,067 stroke cases were included. The pooled RR (95% confidence interval) for CHD associated with a 1-mmol/L increase in total cholesterol was 1.20 (1.16; 1.24) in women and 1.24 (1.20; 1.28) in men, resulting in a RRR of 0.96 (0.93; 0.99). Corresponding RRs for the risk of total stroke were 1.01 (0.98; 1.05) in women, and 1.03 (1.00; 1.05) in men, with a pooled RRR of 0.99 (0.93; 1.04). Pooled RRRs (95% CI) comparing individuals in the highest TC category to those in the lowest, such as the highest versus lowest third, were 0.87 (0.79; 0.96) for CHD and 0.86 (0.76; 0.97) for total stroke.

Conclusion: Raised total cholesterol is a strong risk factor for CHD, with evidence of a small, but significantly stronger, effect in men compared to women. Raised total cholesterol had little effect on the risk of total stroke in both sexes.

Meta-Analysis > Eur J Prev Cardiol. 2020 Aug;27(12):1255-1268.
doi: 10.1177/2047487319871733. Epub 2019 Sep 2.

Association of lowering apolipoprotein B with cardiovascular outcomes across various lipid-lowering therapies: Systematic review and meta-analysis of trials

Safi U Khan [1], Muhammad U Khan [1], Shahul Valavoor [1], Muhammad Shahzeb Khan [2], Victor Okunrintemi [3], Mamas A Mamas [4 5], Thorsten M Leucker [6], Michael J Blaha [6], Erin D Michos [6]

Affiliations + expand

PMID: 31475865 PMCID: PMC7489462 DOI: 10.1177/2047487319871733
Free PMC article

Abstract

Aims: The effect of therapeutic lowering of apolipoprotein B (apoB) on mortality and major adverse cardiovascular events is uncertain. It is also unclear whether these potential effects vary by different lipid-lowering strategies.

Methods: A total of 29 randomized controlled trials were selected using PubMed, Cochrane Library and EMBASE through 2018. We selected trials of therapies which ultimately clear apolipoprotein B particles by upregulating low-density lipoprotein receptor (LDL-R) expression (statins, ezetimibe, proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors, bile acid sequestrants) or therapies which reduce apolipoprotein B independent of LDL-R (cholesteryl ester transfer protein inhibitor, fibrates, niacin, omega-3 fatty acids) with sample size of ≥1000 patients and follow-up of ≥1 year. The meta-regression and meta-analyses were constructed using a random effects model.

Results: In 332,912 patients, meta-regression analyses showed relative risks of 0.95 for all-cause mortality (95% confidence interval 0.92-0.99) and 0.93 (0.88-0.98) for cardiovascular mortality for every 10 mg/dL decrease in apolipoprotein B by all interventions combined. Reduction in all-cause mortality was limited to statins (0.92 (0.86-0.98)). For MACE, the relative risk per 10 mg/dL reduction in apolipoprotein B was 0.93 (0.90-0.97) for all therapies combined, with both statin (0.88 (0.83-0.93)) and non-statin therapies (0.96 (0.94-0.99)). which clear apolipoprotein B by upregulating LDL-R showing significant reductions; whereas interventions which lower apolipoprotein B independent of LDL-R did not demonstrate this effect (1.02 (0.81-1.30)).

Conclusion: While both statin and established non-statin therapies (PCSK9 inhibitor and ezetimibe) reduced cardiovascular risk per decrease in apolipoprotein B, interventions which reduce apolipoprotein B independently of LDL-R were not associated with cardiovascular benefit.

Keywords: Apolipoprotein B; cardiovascular outcomes; meta-regression analysis; mortality.

Review > J Am Coll Cardiol. 2012 Dec 25;60(25):2631-9. doi: 10.1016/j.jacc.2012.09.017. Epub 2012 Oct 17.

Effect of long-term exposure to lower low-density lipoprotein cholesterol beginning early in life on the risk of coronary heart disease: a Mendelian randomization analysis

Brian A Ference [1], Wonsuk Yoo, Issa Alesh, Nitin Mahajan, Karolina K Mirowska, Abhishek Mewada, Joel Kahn, Luis Afonso, Kim Allan Williams Sr, John M Flack

Affiliations + expand

PMID: 23083789 DOI: 10.1016/j.jacc.2012.09.017

Free article

Abstract

Objectives: The purpose of this study was to estimate the effect of long-term exposure to lower plasma low-density lipoprotein cholesterol (LDL-C) on the risk of coronary heart disease (CHD).

Background: LDL-C is causally related to the risk of CHD. However, the association between long-term exposure to lower LDL-C beginning early in life and the risk of CHD has not been reliably quantified.

Methods: We conducted a series of meta-analyses to estimate the effect of long-term exposure to lower LDL-C on the risk of CHD mediated by 9 polymorphisms in 6 different genes. We then combined these Mendelian randomization studies in a meta-analysis to obtain a more precise estimate of the effect of long-term exposure to lower LDL-C and compared it with the clinical benefit associated with the same magnitude of LDL-C reduction during treatment with a statin.

Results: All 9 polymorphisms were associated with a highly consistent reduction in the risk of CHD per unit lower LDL-C, with no evidence of heterogeneity of effect (I(2) = 0.0%). In a meta-analysis combining nonoverlapping data from 312,321 participants, naturally random allocation to long-term exposure to lower LDL-C was associated with a 54.5% (95% confidence interval: 48.8% to 59.5%) reduction in the risk of CHD for each mmol/l (38.7 mg/dl) lower LDL-C. This represents a 3-fold greater reduction in the risk of CHD per unit lower LDL-C than that observed during treatment with a statin started later in life ($p = 8.43 \times 10(-19)$).

Conclusions: Prolonged exposure to lower LDL-C beginning early in life is associated with a substantially greater reduction in the risk of CHD than the current practice of lowering LDL-C beginning later in life.

Cardiovascular Risk

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doi: 10.1080/07315724.2017.1318317. Epub 2017 Jun 19.

Dietary Red and Processed Meat Intake and Markers of Adiposity and Inflammation: The Multiethnic Cohort Study

Weiwen Chai [1], Yukiko Morimoto [2], Robert V Cooney [3], Adrian A Franke [2], Yurii B Shvetsov [2], Loïc Le Marchand [2], Christopher A Haiman [4], Laurence N Kolonel [2], Marc T Goodman [5], Gertraud Maskarinec [2]
Affiliations
•PMID: 28628401
•PMCID: PMC5540319
•DOI: 10.1080/07315724.2017.1318317

Abstract

Objective: The potential influence of dietary factors on inflammation is important for cancer prevention. Utilizing data from control participants (312 men, 911 women) in 2 nested case-control studies of cancer within the Multiethnic Cohort, we examined the associations of red and processed meat intake with serum levels of leptin, adiponectin, C-reactive protein (CRP), tumor necrosis factor (TNF)-α, and interleukin (IL)-6 and the mediator effect of body mass index (BMI) on the above associations (if present).

Methods: Multivariable linear models were applied to assess the association between red and processed meat intake at cohort entry and serum biomarker levels measured 9.1 years later after adjusting for covariates and to determine the mediator effect of BMI.

Results: Overall red and processed meat intake was positively associated with serum leptin levels in men (β = 0.180, p = 0.0004) and women (β = 0.167, p < 0.0001). In women, higher red and processed meat consumption was significantly associated with higher CRP (β = 0.069, p = 0.03) and lower adiponectin levels (β = -0.082, p = 0.005). In mediation analyses with red and processed meat intake and BMI as predictors, the associations of red and processed meat with biomarkers decreased substantially (as indicated by percentage change in effect: leptin in men, 13.4%; leptin in women, 13.7%; adiponectin in women, -4.7%; CRP in women, 7.4%) and were no longer significant (p > 0.05), whereas BMI remained significantly associated with serum leptin (men: β = 3.209, p < 0.0001; women: β = 2.891, p < 0.0001), adiponectin (women: β = -1.085, p < 0.0001), and CRP (women: β = 1.581, p < 0.0001).

Conclusion: The current data suggest that the amount of excess body weight or the degree of adiposity may mediate the relations between dietary red and processed meat intake and serum biomarkers associated with obesity and inflammation.

If you are overweight, the amount of red meat and saturated fat will affect cardiovascular risk.

Effects of Total Red Meat Intake on Glycemic Control and Inflammatory Biomarkers: A Meta-Analysis of Randomized Controlled Trials

Lauren E O'Connor [1,2], Jung Eun Kim [2,3], Caroline M Clark [2], Wenbin Zhu [4], Wayne W Campbell [2]

•PMID: 32910818
• DOI: 10.1093/advances/nmaa096

Abstract

Our objective was to conduct a systematic review and meta-analysis to assess the effects of total red meat (TRM) intake on glycemic control and inflammatory biomarkers using randomized controlled trials of individuals free from cardiometabolic disease. We hypothesized that higher TRM intake would negatively influence glycemic control and inflammation based on positive correlations between TRM and diabetes. We found 24 eligible articles (median duration, 8 weeks) from 1172 articles searched in PubMed, Cochrane, and CINAHL up to August 2019 that included 1) diet periods differing in TRM; 2) participants aged ≥19 years; 3) included either men or women who were not pregnant/lactating; 4) no diagnosed cardiometabolic disease; and 5) data on fasting glucose, insulin, HOMA-IR, glycated hemoglobin (HbA1c), C-reactive protein (CRP), or cytokines. We used 1) a repeated-measures ANOVA to assess pre to post diet period changes; 2) random-effects meta-analyses to compare pre to post changes between diet periods with ≥ vs. <0.5 servings (35g)/day of TRM; and 3) meta-regressions for dose-response relationships. We grouped diet periods to explore heterogeneity sources, including risk of bias, using the National Heart, Lung, and Blood Institute's Quality Assessment of Controlled Interventions Studies. Glucose, insulin, and HOMA-IR values decreased, while HbA1c and CRP values did not change during TRM or alternative diet periods. There was no difference in change values between diet periods with ≥ vs. <0.5 servings/day of TRM [weighted mean differences (95% CIs): glucose, 0.040 mmol/L (-0.049, 0.129); insulin, -0.710 pmol/L (-6.582, 5.162); HOMA-IR, 0.110 (-0.072, 0.293); CRP, 2.424 nmol/L (-1.460, 6.309)] and no dose response relationships (P > 0.2). Risk of bias (85% of studies were fair to good) did not influence results. Total red meat consumption, for up to 16 weeks, does not affect changes in biomarkers of glycemic control or inflammation for adults free of, but at risk for, cardiometabolic disease. This trial was registered at PROSPERO as 2018 CRD42018096031.

A cohort study examined the relationship between relationship between red meat, BMI and inflammatory markers (CRP, TNF-**α**, and IL-6) in 1223 subjects. They did indeed find that red meat intake was associated with markers of inflammation. **HOWEVER**, when they corrected for the differences in **BMI**, the associations between red meat and inflammatory markers were no longer significant, while the associations between BMI and inflammation were.

Meat consumption and risk of 25 common conditions: outcome-wide analyses in 475,000 men and women in the UK Biobank study

Keren Papier, Georgina K. Fensom, Anika Knuppel, Paul N. Appleby, Tammy Y. N. Tong, Julie A. Schmidt, Ruth C. Travis, Timothy J. Key & Aurora Perez-Cornago

BMC Medicine **19**, Article number: 53 (2021) | Cite this article

18k Accesses | **1124** Altmetric | Metrics

Abstract

Background

There is limited prospective evidence on the association between meat consumption and many common, non-cancerous health outcomes. We examined associations of meat intake with risk of 25 common conditions (other than cancer).

Methods

We used data from 474,985 middle-aged adults recruited into the UK Biobank study between 2006 and 2010 and followed up until 2017 (mean follow-up 8.0 years) with available information on meat intake at baseline (collected via touchscreen questionnaire), and linked hospital admissions and mortality data. For a large sub-sample (~ 69,000), dietary intakes were re-measured three or more times using an online, 24-h recall questionnaire.

Results

On average, participants who reported consuming meat regularly (three or more times per week) had more adverse health behaviours and characteristics than participants who consumed meat less regularly, and most of the positive associations observed for meat consumption and health risks were substantially attenuated after adjustment for body mass index (BMI). In multi-variable adjusted (including BMI) Cox regression models corrected for multiple testing, higher consumption of unprocessed red and processed meat combined was associated with higher risks of ischaemic heart disease (hazard ratio (HRs) per 70 g/day higher intake 1.15, 95% confidence intervals (CIs) 1.07–1.23), pneumonia (1.31, 1.18–1.44), diverticular disease (1.19, 1.11–1.28), colon polyps (1.10, 1.06–1.15), and diabetes (1.30, 1.20–1.42); results were similar for unprocessed red meat and processed meat intakes separately. Higher consumption of unprocessed red meat alone was associated with a lower risk of iron deficiency anaemia (IDA: HR per 50 g/day higher intake 0.80, 95% CIs 0.72–0.90). Higher poultry meat intake was associated with higher risks of gastro-oesophageal reflux disease (HR per 30 g/day higher intake 1.17, 95% CIs 1.09–1.26), gastritis and duodenitis (1.12, 1.05–1.18), diverticular disease (1.10, 1.04–1.17), gallbladder disease (1.11, 1.04–1.19), and diabetes (1.14,

Conclusions

Higher unprocessed red meat, processed meat, and poultry meat consumption was associated with higher risks of several common conditions; higher BMI accounted for a substantial proportion of these increased risks suggesting that residual confounding or mediation by adiposity might account for some of these remaining associations. Higher unprocessed red meat and poultry meat consumption was associated with lower IDA risk.

Long-term weight maintenance and cardiovascular risk factors are not different following weight loss on carbohydrate-restricted diets high in either monounsaturated fat or protein in obese hyperinsulinaemic men and women

Jennifer B Keogh[1], Natalie D Luscombe-Marsh, Manny Noakes, Gary A Wittert, Peter M Clifton
PMID: 17298712 DOI: 10.1017/S0007114507252687

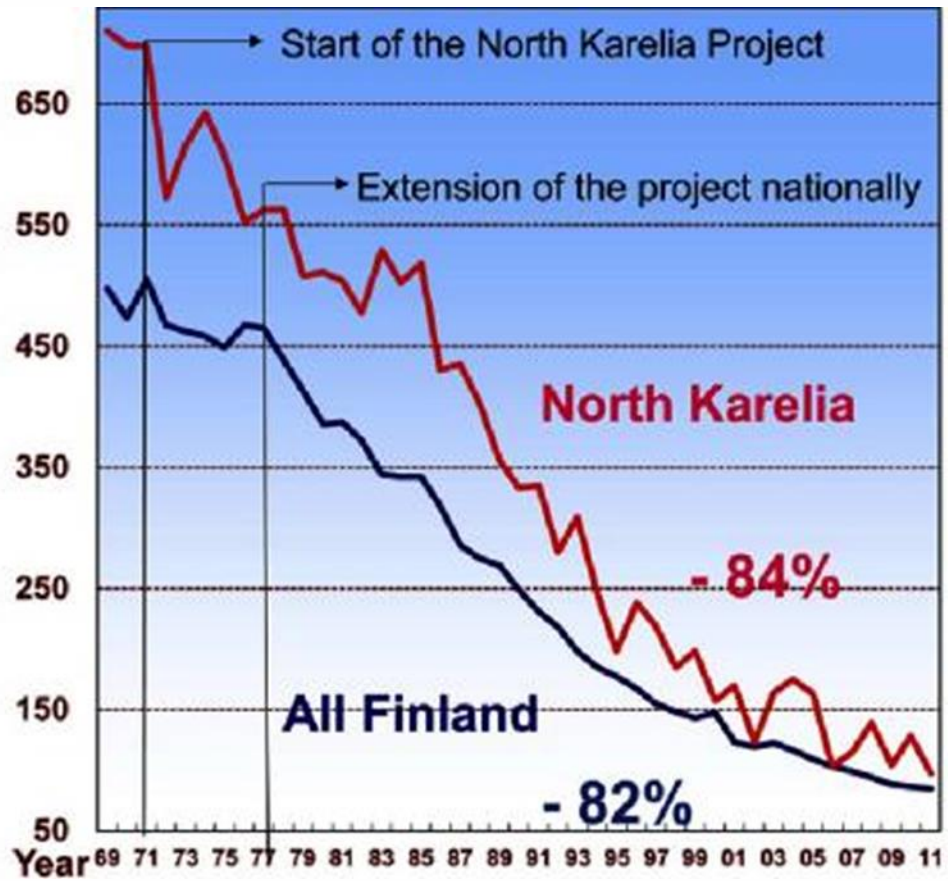
The aim of this study was to determine after 52 weeks whether advice to follow a lower carbohydrate diet, either high in monounsaturated fat or low fat, high in protein had differential effects in a free-living community setting. Following weight loss on either a high monounsaturated fat, standard protein (HMF; 50 % fat, 20 % protein (67 g/d), 30 % carbohydrate) or a high protein, moderate fat (HP) (40 % protein (136 g/d), 30 % fat, 30 % carbohydrate) energy-restricted diet (6000 kJ/d) subjects were asked to maintain the same dietary pattern without intensive dietary counselling for the following 36 weeks. Overall weight loss was 6.2 (SD 7.3) kg ($P < 0.01$ for time with no diet effect, 7.6 (SD 8.1) kg, HMF v. 4.8 (SD 6.6) kg, HP). In a multivariate regression model predictors of weight loss at the end of the study were sex, age and reported percentage energy from protein (R2 0.22, $P < 0.05$ for the whole model). Fasting plasma insulin decreased ($P < 0.01$, with no difference between diets), 13.9 (SD 4.6) to 10.2 (SD 5.2) mIU/l, but fasting plasma glucose was not reduced. Neither total cholesterol nor LDL-cholesterol were different but HDL was higher, 1.19 (SD 0.26) v. 1.04 (SD 0.29) ($P < 0.001$ for time, no diet effect), while TAG was lower, 1.87 (SD 1.23) v. 2.22 (SD 1.15) mmol/l ($P < 0.05$ for time, no diet effect). C-reactive protein decreased (3.97 (SD 2.84) to 2.43 (SD 2.29) mg/l, $P < 0.01$). Food records showed that compliance to the prescribed dietary patterns was poor. After 1 year there remained a clinically significant weight loss and improvement in cardiovascular risk factors with no adverse effects of a high monounsaturated fat diet.

Essentially no difference in CV risk factors between the groups.

Finland Study

North Karelia and

Finland aged 35-64



Mortality per 100,000

Finland

1972 North Karelia Highest CV mortality in the world, 700 deaths/100,000

- Reduced Saturated Fat intake from 23% of total calories to less than 10% (40%)
- Reduced BP (20%)
- Reduced Smoking
- Reduced Obesity

Reduced CV Mortality by 84%

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6062761/

Cardiovascular Risk

Conclusions:

Obesity and elevated BMI increase all inflammatory and CV risk factors

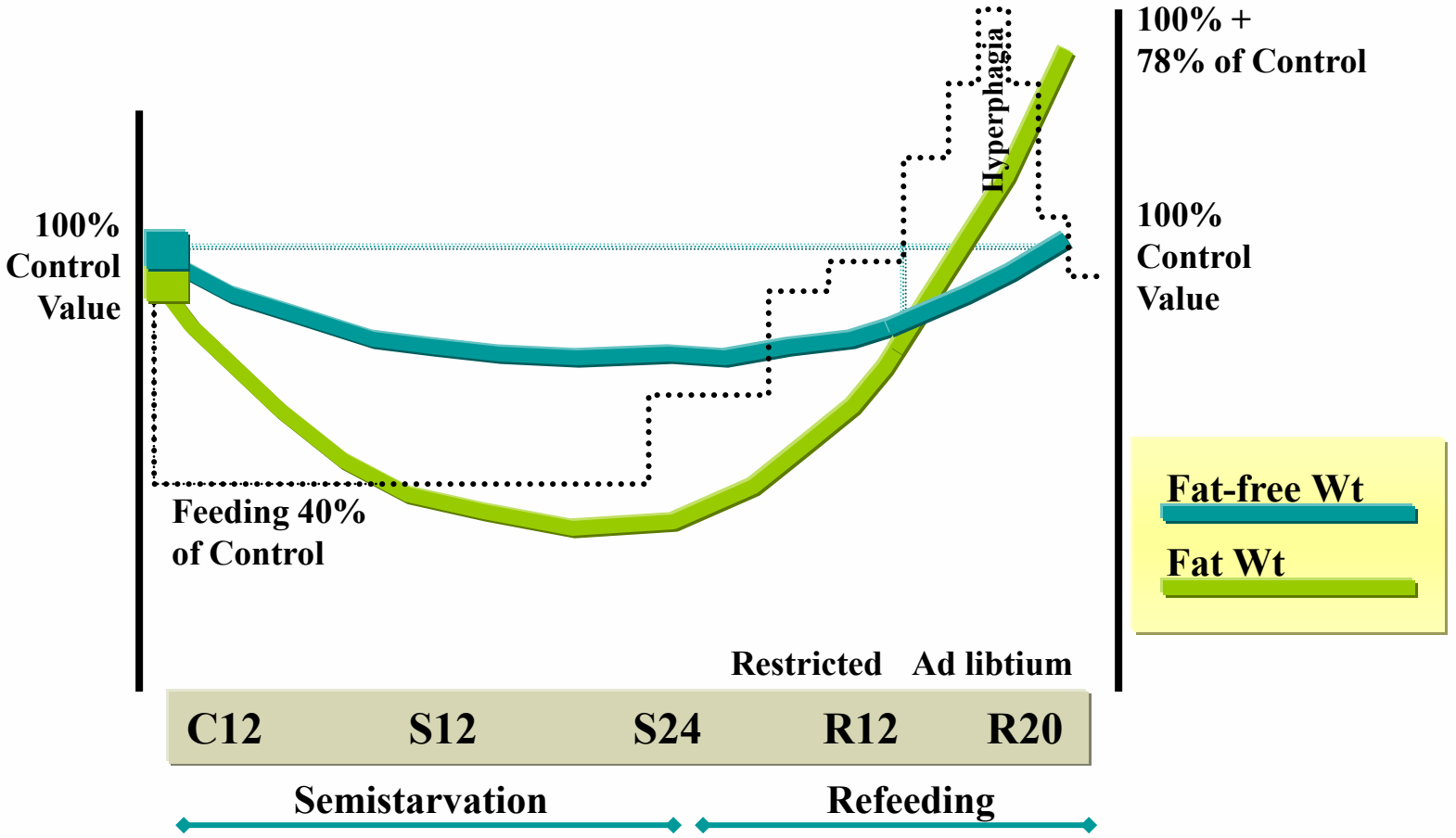
Calorie deficit and weight loss improve all CV risk factors

Macronutrient breakdown makes no difference

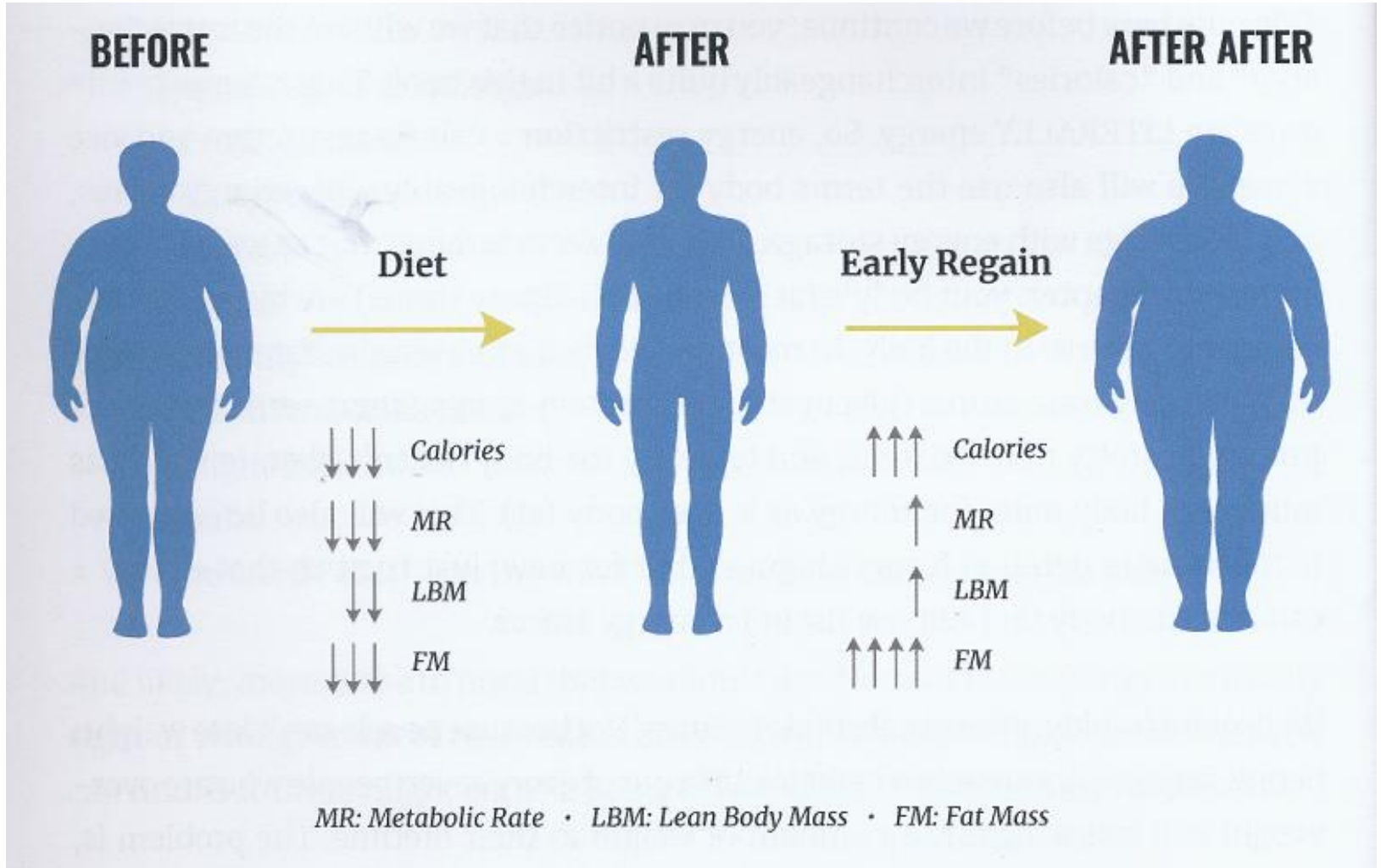
Leaner individuals have less CV risk

Protein very important to protect lean body mass, satiety, and cause fat loss

Yo-yo dieting is horrible



Keys, 1950; Dulloo, AJCN - 1997


BEFORE
AFTER
AFTER AFTER
Diet
Early Regain
Calories
MR
LBM
FM
Calories
MR
LBM
FM
MR: Metabolic Rate • LBM: Lean Body Mass • FM: Fat Mass

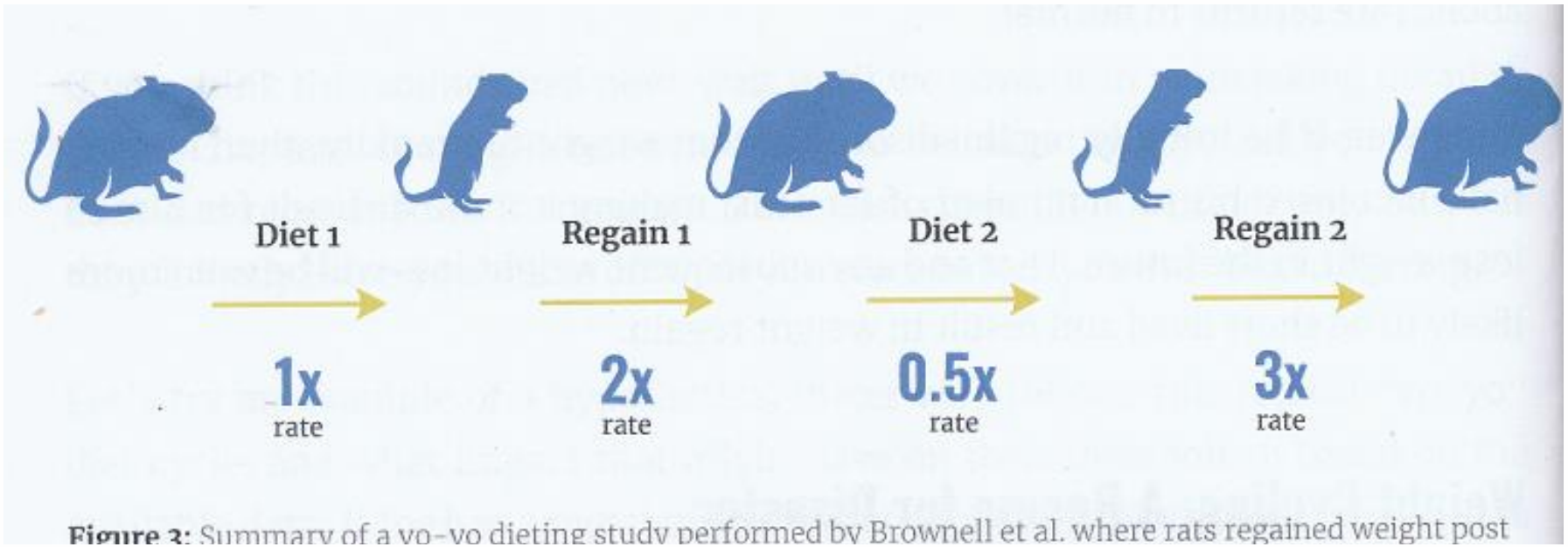
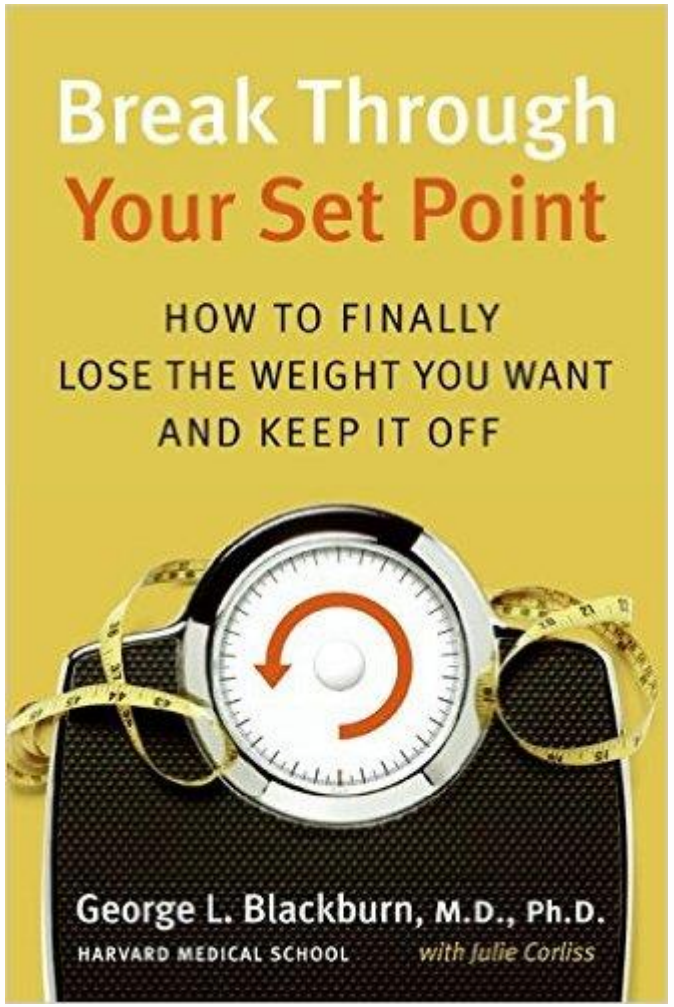


Figure 3: Summary of a yo-yo dieting study performed by Brownell et al. where rats regained weight post

Why Diets Fail

- Calorie counting
- Expensive
- Difficult to follow
- Too extreme
- Unhealthy
- Not good fit for you
- Fighting Against Your Set Point
- Lose interest after plateau and adaptation
- Calories too low


Break Through
Your Set Point
HOW TO FINALLY
LOSE THE WEIGHT YOU WANT
AND KEEP IT OFF
George L. Blackburn, M.D., Ph.D.
HARVARD MEDICAL SCHOOL
with Julie Corliss

Set Point

Dr. George Blackburn – Harvard Physician. Set point. 35 years of research on Weight Loss. Lose 10%, hold steady for 6 months, repeat. Invented original formula for SlimFast Shakes.

Vermont Prison Experiment 1964 – overfeeding and underfeeding prisoners, all went back to original weight when left alone

Minnesota Starvation Study – Dr. Ancel Keys. Difficult to lose a lot of weight over short period of time. Body will rebel and bad outcomes occur.

Fight to Maintain

The biggest battle in weight loss is the fight to keep it off.

Metabolic Adaptation

Metabolic Adaptation

TDEE/RMR/BMR goes down, and can stay down for very long time (years, see Biggest Loser contestants after 6 years)

Genetically programmed self defense mechanism to ward off starvation and enhance weight gain/storage and reduces the chance of future diet success and enhances future weight regain.

Buffer calories of 200-300
Body reduces NEAT

Keys to Fat Loss

- Keep calories as high as possible while still in a deficit
- Slow, maintained weight loss to protect lean mass (the slower the better)
- Don’t lower fat too much (decreases testosterone and other hormones)
- Don’t crash diet
- Calorie deficit
- Keep protein high
- Strength train hard
- Refeeds (results may vary)
- Diet Breaks (longer than refeeds)

https://pubmed.ncbi.nlm.nih.gov/28925405-intermittent-energy-restriction-improves-weight-loss-efficiency-in-obese-men-the-matador-study/?from_single_result=ijo2017206

Intermittent energy restriction improves weight loss efficiency in obese men: the MATADOR study

N M Byrne [1,2], A Sainsbury [3], N A King [2], A P Hills [1,2], R E Wood [1,2]
Affiliations
•PMID: 28925405
•PMCID: PMC5803575
•DOI: 10.1038/ijo.2017.206
Free PMC article

Abstract

Background/objectives: The MATADOR (Minimising Adaptive Thermogenesis And Deactivating Obesity Rebound) study examined whether intermittent energy restriction (ER) improved weight loss efficiency compared with continuous ER and, if so, whether intermittent ER attenuated compensatory responses associated with ER.

Subjects/methods: Fifty-one men with obesity were randomised to 16 weeks of either: (1) continuous (CON), or (2) intermittent (INT) ER completed as 8 × 2-week blocks of ER alternating with 7 × 2-week blocks of energy balance (30 weeks total). Forty-seven participants completed a 4-week baseline phase and commenced the intervention (CON: N=23, 39.4±6.8 years, 111.1±9.1 kg, 34.3±3.0 kg m^{-2}; INT: N=24, 39.8±9.5 years, 110.2±13.8 kg, 34.1±4.0 kg m^{-2}). During ER, energy intake was equivalent to 67% of weight maintenance requirements in both groups. Body weight, fat mass (FM), fat-free mass (FFM) and resting energy expenditure (REE) were measured throughout the study.

Results: For the N=19 CON and N=17 INT who completed the intervention per protocol, weight loss was greater for INT (14.1±5.6 vs 9.1±2.9 kg; P<0.001). INT had greater FM loss (12.3±4.8 vs 8.0±4.2 kg; P<0.01), but FFM loss was similar (INT: 1.8±1.6 vs CON: 1.2±2.5 kg; P=0.4). Mean weight change during the 7 × 2-week INT energy balance blocks was minimal (0.0±0.3 kg). While reduction in absolute REE did not differ between groups (INT: -502±481 vs CON: -624±557 kJ d^{-1}; P=0.5), after adjusting for changes in body composition, it was significantly lower in INT (INT: -360±502 vs CON: -749±498 kJ d^{-1}; P<0.05).

Conclusions: Greater weight and fat loss was achieved with intermittent ER. Interrupting ER with energy balance 'rest periods' may reduce compensatory metabolic responses and, in turn, improve weight loss efficiency.

https://pubmed.ncbi.nlm.nih.gov/28925405/

Key Points

•Despite the same energy deficit and the same total time spent in an energy deficit, a group taking two-week diet breaks after every two weeks of dieting lost ~50% more fat mass compared to a group dieting continuously for 16 weeks. However, due to the frequency of these breaks, the group performing diet breaks required 30 weeks to complete all 16 weeks of dieting.

•Additionally, resting energy expenditure dropped only half as much in the diet break group compared to the continuous diet group when adjusted for body composition. This may be why the difference in groups favored the diet break group to a greater degree after a six-month follow-up, indicating diet breaks may help with the maintenance of weight loss after a diet concludes.

•Diet breaks appear to reverse important physiological adaptations to an energy deficit, subsequently making the dieting period following a break more effective for fat loss. While increasing the time required to complete a diet as much as was done in this study is probably impractical, performing a diet break every 4-8 weeks versus every two weeks may be a useful strategy for physique competitors and weight class-restricted strength athletes to enhance fat loss and mitigate declines in resting energy expenditure

https://pubmed.ncbi.nlm.nih.gov/28925405/

Keeping Weight Off

Sustainability and adherence

1. Cognitive Restraint in some form
2. Self monitoring
3. Regular Exercise (formed good habits)
4. Structured Programs
5. Ability to focus on long term goals

https://pubmed.ncbi.nlm.nih.gov/18268511-dietary-adherence-and-weight-loss-success-among-overweight-women-results-from-the-a-to-z-weight-loss-study/
https://pubmed.ncbi.nlm.nih.gov/16854220-dietary-and-physical-activity-behaviors-among-adults-successful-at-weight-loss-maintenance/?from_single_result=pmc1555605
https://pubmed.ncbi.nlm.nih.gov/22516488-successful-weight-loss-among-obese-us-adults/?from_single_result=pmc3339766
https://pubmed.ncbi.nlm.nih.gov/19587114-regular-exercise-attenuates-the-metabolic-drive-to-regain-weight-after-long-term-weight-loss/?from_single_result=pmc2739786
https://pubmed.ncbi.nlm.nih.gov/21677272-biologys-response-to-dieting-the-impetus-for-weight-regain/?from_single_result=pmc3174765

Plateau

Reduce calories slightly (fat or carbs)
Add in more exercise or activity

Lower carbs and fat by 5-10-15% per day (keep protein the same)
Increase activity 5-10-15% (may not make a difference at all)

*Relative to your current activity level

Life Revolves Around Food

- Our lives shouldn’t revolve around eating
- What are you doing for lunch?
- Let's go out to eat
- Funerals, weddings, parties, birthdays
- Happy, depressed, emotional eating

- Eat to live. Don’t live to eat!

What causes Weight gain?

Hypothalmus & Hormones

- Controls hunger and satiety, homeostasis
- Insulin, leptin, adiponectin, ghrelin
- Ghrelin- hunger hormone. Tells the brain the stomach is empty. Gastric bypass surgery eliminates parts of stomach that secrete this. Traditional dieting, boosts this level. Signals hunger 4 hours after previous meal.
- Incretins in small bowel tell brain to stop eating.
- Leptin- made in adipose tissue. Signals to brain that enough fat has been stored in body to be able to sustain a pregnancy. People without it are gigantic.
- Vagus nerve – stomach stretch response tells brain it’s full. Was target of early meds.

Weight Gain Medications

- Diabetes: insulin, thiazolidinediones, and sulfonylureas
- Antipsychotics: haloperidol, clozapine, risperidone, quetiapine, olanzapine, and lithium
- Antidepressant: amitriptyline, imipramine, paroxetine, trazadone, alprazolam, and sertraline
- Epilepsy: valproate, carbamazepine, and gabapentin
- Steroids: prednisone or birth control pills
- Blood pressure: beta-blockers
- Antihistamines: ranitidine, diphenhydramine, cetirizine
- Opioids: oxycodone, hydrocodone

Weight loss Medications

- Metformin, symlin, acarbose, januvia/galvus, byetta, victoza, ACEIs/ARBs, Norvasc, topamax, wellbutrin, chemo, flagyl, amio, hydralazine, theophylline, fluoxetine, adderall, abilify, geodon, sulphasalazine, caffiene, acetazolamide, quinidine, amphotericine B,

Weight Loss Medications

- Xenical
- Adipex
- Qsymia
- Bontril
- Contrave
- Saxenda, Ozempic, Mounjaro (GLP-1, GIP)

To use

- BMI over 30 or
- BMI 27 with 1 risk factor

Xenical

- Alli/Orlistat
- Prevents fat absorption
- SE: Loose stool, diarrhea, oily stool
- Modest Weight loss 4-6 pounds/year

Adipex (phentermine)

- Affects hypothal to release norepi. Also works on other tissues to release epi to break down stored fat. Also releases small amounts of seratonin and dopamine.
- Anorexigenics or anoretics
- Significant pHTN and valvular heart disease when used with fenfluramine and dexafenfluramine
- Tolerance to effect after a few weeks
- 3 months duration (Ohio)
- Amphetamine abuse
- Stimulant side effects
- Withdrawal gives fatigue, sleepy
- Avoid alpha blockers, anti-depressants

Qsymia

- Combo: phentermine and topamax

Topamax: anticonvulsant, migraines

Modified fructose, excreted in urine

SE: Somnolence, depression, fatigue, hairloss, glaucoma, nystagmus, parasthesias

Bontril

- Phendimetrazine tartrate- stimulant, sympathomimetic amine, similar to phentermine
- Magnitude of increased weight loss of drug-treated patients over placebo treated patients is only a fraction of a pound a week
- No valvulopathies

Contraindications:

- Known hypersensitivity or idiosyncratic reactions to sympathomimetics.
- Advanced arteriosclerosis, symptomatic cardiovascular disease, moderate and severe hypertension, hyperthyroidism, and glaucoma.
- Highly nervous or agitated patients.
- Patients with a history of drug abuse.
- Patients taking other CNS stimulants, including monoamine oxidase inhibitors

Contrave

Buproprion/Naltrexone combination

Bup: dopa, norepi reuptake inhib and pure opioid antagonist reduces reward from eating, reduce cravings

Naltrexone blocks the MOP-R and prevents the β-endorphin-mediated feedback autoinhibition of POMC cells. Together, the **naltrexone**/bupropion combination produces a greater increase in POMC activity than either drug alone. This increased POMC activity is suppresses appetite.

Synergistic effect on weight loss

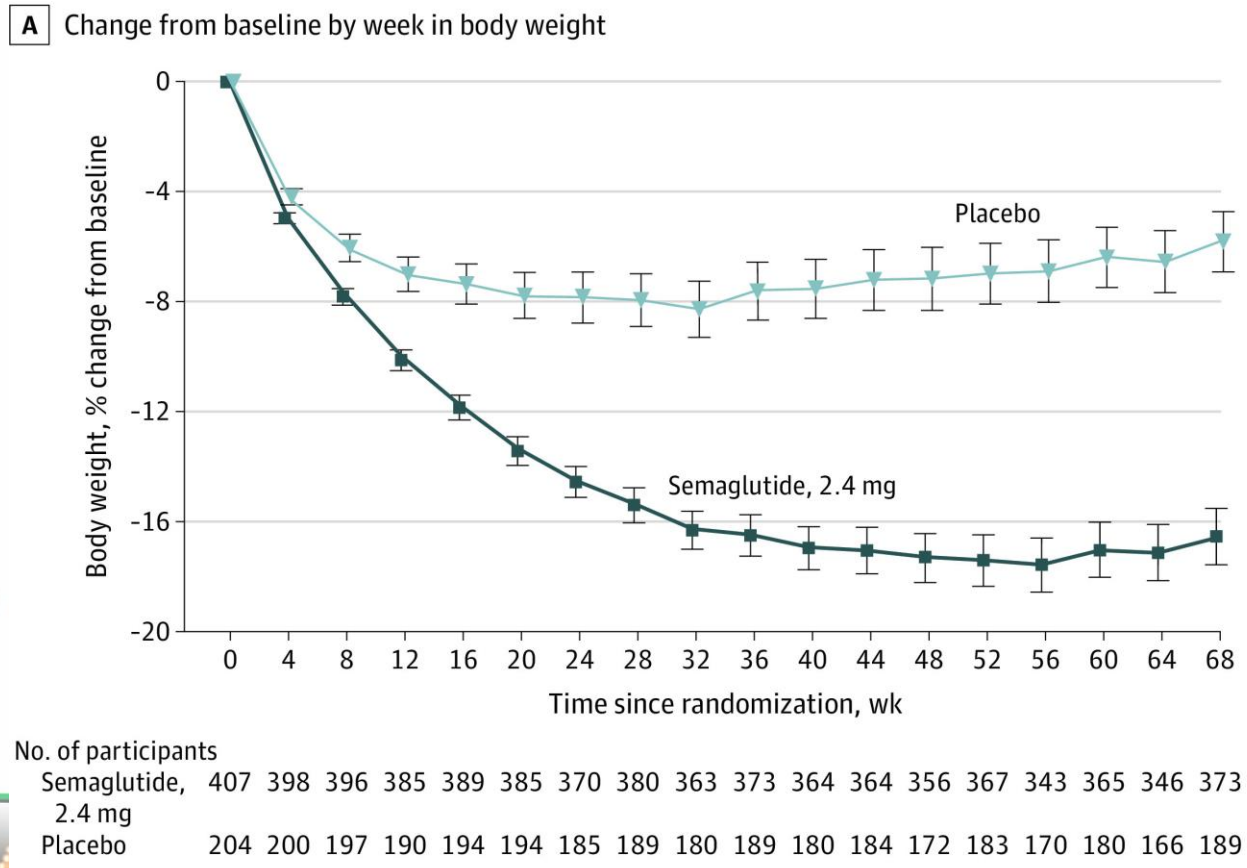
Affects hypothal decreases appetite

11-16 pounds/year (or 5% of starting weight)

GLP1s & GIP

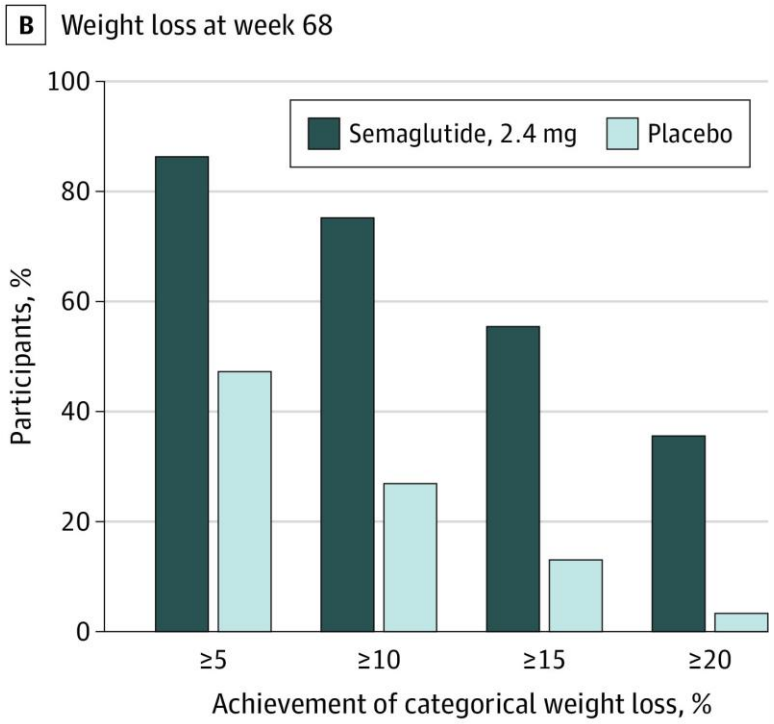
- Oral and Injectable GLP1 agonist, appetite and calorie intake regulation (does not increase energy expenditure)
- Activate glucose-dependent insulinotropic polypeptide (GIP) (Mounjaro only) and glucagon-like peptide-1 (GLP-1) receptors
- Start at lower dose and work up to 3mg
- Cut back other diabetic meds
- Possible risk of pancreatitis, monitor closely
- SE: Mostly GI, mostly Nausea (39%), but only 9% quit study due to nausea
- 5 studies, 3384 patients, diet, counseling and saxenda
- Ozempic/Rybelsus/Wegovy, Liraglutide (Victoza/Saxenda), Byetta, Bydureon, Trulicity, Adlyxin, Mounjaro

Semaglutide



No. of participants

Semaglutide, 2.4 mg	407	398	396	385	389	385	370	380	363	373	364	364	356	367	343	365	346	373
Placebo	204	200	197	190	194	194	185	189	180	189	180	184	172	183	170	180	166	189



https://pubmed.ncbi.nlm.nih.gov/33625476/

Clinical Trial > JAMA. 2021 Apr 13;325(14):1403-1413. doi: 10.1001/jama.2021.1831.

Effect of Subcutaneous Semaglutide vs Placebo as an Adjunct to Intensive Behavioral Therapy on Body Weight in Adults With Overweight or Obesity: The STEP 3 Randomized Clinical Trial

Thomas A Wadden [1], Timothy S Bailey [2], Liana K Billings [3], Melanie Davies [4] [5], Juan P Frias [6], Anna Koroleva [7], Ildiko Lingvay [8], Patrick M O'Neil [9], Domenica M Rubino [10], Dorthe Skovgaard [7], Signe O R Wallenstein [7], W Timothy Garvey [11], STEP 3 Investigators

Affiliations + expand

PMID: 33625476 PMCID: PMC7905697 DOI: 10.1001/jama.2021.1831

Free PMC article

Abstract

Importance: Weight loss improves cardiometabolic risk factors in people with overweight or obesity. Intensive lifestyle intervention and pharmacotherapy are the most effective noninvasive weight loss approaches.

Objective: To compare the effects of once-weekly subcutaneous semaglutide, 2.4 mg vs placebo for weight management as an adjunct to intensive behavioral therapy with initial low-calorie diet in adults with overweight or obesity.

Design, setting, and participants: Randomized, double-blind, parallel-group, 68-week, phase 3a study (STEP 3) conducted at 41 sites in the US from August 2018 to April 2020 in adults without diabetes (N = 611) and with either overweight (body mass index ≥27) plus at least 1 comorbidity or obesity (body mass index ≥30).

Interventions: Participants were randomized (2:1) to semaglutide, 2.4 mg (n = 407) or placebo (n = 204), both combined with a low-calorie diet for the first 8 weeks and intensive behavioral therapy (ie, 30 counseling visits) during 68 weeks.

Main outcomes and measures: The co-primary end points were percentage change in body weight and the loss of 5% or more of baseline weight by week 68. Confirmatory secondary end points included losses of at least 10% or 15% of baseline weight.

Results: Of 611 randomized participants (495 women [81.0%], mean age 46 years [SD, 13], body weight 105.8 kg [SD, 22.9], and body mass index 38.0 [SD, 6.7]), 567 (92.8%) completed the trial, and 505 (82.7%) were receiving treatment at trial end. At week 68, the estimated mean body weight change from baseline was -16.0% for semaglutide vs -5.7% for placebo (difference, -10.3 percentage points [95% CI, -12.0 to -8.6]; P < .001). More participants treated with semaglutide vs placebo lost at least 5% of baseline body weight (86.6% vs 47.6%, respectively; P < .001). A higher proportion of participants in the semaglutide vs placebo group achieved weight losses of at least 10% or 15% (75.3% vs 27.0% and 55.8% vs 13.2%, respectively; P < .001). Gastrointestinal adverse events were more frequent with semaglutide (82.8%) vs placebo (63.2%). Treatment was discontinued owing to these events in 3.4% of semaglutide participants vs 0% of placebo participants.

Conclusions and relevance: Among adults with overweight or obesity, once-weekly subcutaneous semaglutide compared with placebo, used as an adjunct to intensive behavioral therapy and initial low-calorie diet, resulted in significantly greater weight loss during 68 weeks. Further research is needed to assess the durability of these findings.

RESEARCH SUMMARY

Once-Weekly Semaglutide in Adults with Overweight or Obesity

Wilding JPH. et al. DOI: 10.1056/NEJMoa2032183

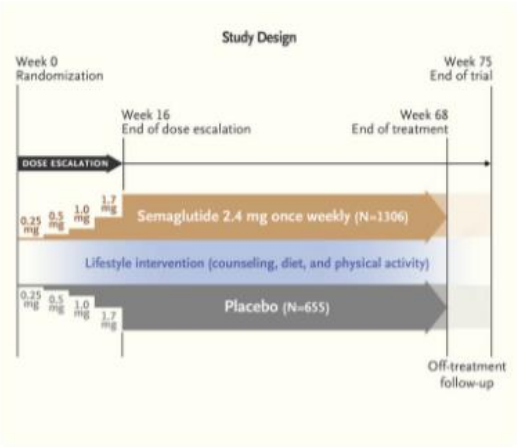
CLINICAL PROBLEM

Clinical guidelines suggest pharmacologic intervention in addition to diet and exercise to promote weight loss among adults with BMI ≥30 (or ≥27 in those with coexisting conditions). Barriers to medication use include limited efficacy, adverse effects, and cost. Subcutaneous semaglutide, a glucagon-like peptide-1 analogue FDA-approved to treat type 2 diabetes in adults, has been accompanied by weight loss in previous clinical trials.

CLINICAL TRIAL

A phase 3, double-blind, randomized, controlled trial comparing semaglutide with placebo, plus lifestyle changes, in overweight or obese adults without diabetes.

1961 participants were assigned to receive 2.4 mg of subcutaneous semaglutide (with gradual increase to the 2.4 mg dose) or placebo weekly for 68 weeks; both groups received a counseling intervention involving diet and exercise. Coprimary end points were percentage change in body weight and weight reduction ≥5%.



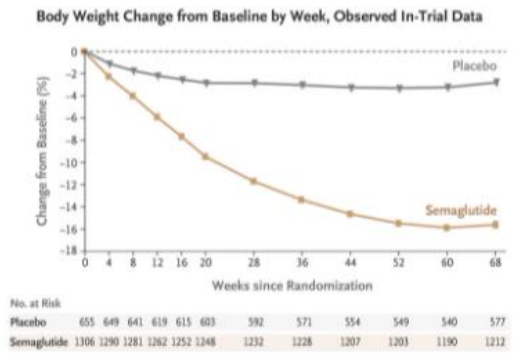
RESULTS

Efficacy:

By week 68, mean weight declined more with semaglutide than with placebo (14.9% vs. 2.4%; estimated difference, −12.4 percentage points; 95% CI, −13.4 to −11.5). In addition, more participants in the semaglutide group than in the placebo group had weight loss of ≥5% (86.4% vs. 31.5%).

Safety:

Adverse events, mainly gastrointestinal, were most often mild to moderate but led to treatment discontinuation in 7.0% of the semaglutide group and 3.1% of the placebo group. Serious adverse events, primarily gastrointestinal and hepatobiliary events, were reported more often with semaglutide.



LIMITATIONS AND REMAINING QUESTIONS

Limitations:

- 43.7% of participants had prediabetes and might have responded differentially to the effects of semaglutide on weight gain.

Further study is required to understand the following:

- Whether results would be similar in persons who differ from the study participants, who were mainly female, White, and potentially highly motivated to lose weight
- Longer-term outcomes
- The mechanism by which semaglutide affects weight-related measures of health (e.g., body composition and glycated hemoglobin) in patients without diabetes

Links: **Full article** | **NEJM Quick Take** | **Editorial**

CONCLUSIONS

Adults without diabetes who were overweight or obese had clinically relevant weight loss with weekly injections of semaglutide (2.4 mg) added to lifestyle changes.

Semaglutide with Diet and Exercise

Vs

Diet and Exercise Alone

Totally free article:
https://www.nejm.org/doi/10.1056/NEJMoa2032183

Mounjaro

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Tirzepatide Once Weekly for the Treatment of Obesity

Jastreboff AM et al. DOI: 10.1056/NEJMoa2206038

CLINICAL PROBLEM

Several clinical guidelines recommend pharmacotherapy for obesity. Tirzepatide — a dual glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 receptor agonist recently approved in the United States to treat type 2 diabetes — induced clinically relevant weight reduction in phase 2 studies of people with diabetes. However, its efficacy for weight reduction in those without diabetes is unknown.

CLINICAL TRIAL

Design: An international, phase 3, double-blind, randomized, placebo-controlled trial examined the efficacy and safety of tirzepatide in adults with obesity or overweight who did not have diabetes.

Intervention: 2539 adults with a body-mass index of 30 or higher, or 27 or higher with at least one weight-related complication, were assigned to once-weekly subcutaneous tirzepatide at one of three doses (5 mg, 10 mg, or 15 mg) or placebo, in addition to lifestyle intervention. Treatment included a dose-escalation phase and lasted for 72 weeks. The coprimary end points were the percentage change in weight from baseline to week 72 and weight reduction of at least 5% by week 72.

RESULTS

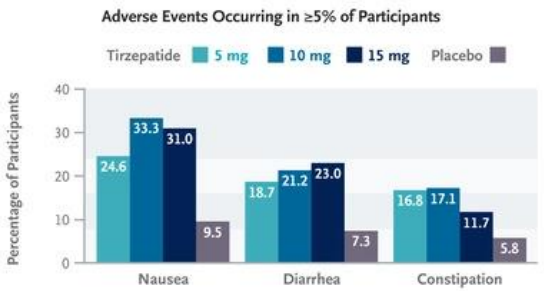
Efficacy: Both the percentage change in weight and the percentage of participants with at least 5% weight reduction were significantly greater with all three doses of tirzepatide than with placebo.

Safety: Gastrointestinal events, including nausea, diarrhea, and constipation, were the most common adverse events seen with tirzepatide; the majority of events were transient and mild to moderate in severity.

LIMITATIONS AND REMAINING QUESTIONS

- Enrolled participants may have been more committed to weight management than many people with obesity.
- Cardiometabolic variables (e.g., blood pressure and lipid levels) were relatively normal at baseline, so the ability to show a potential improvement within the time frame of this study was limited.
- The number of participants with overweight plus at least one weight-related complication was small (140 of the 2539 participants; 5.5%), which prevented definitive conclusions in this subgroup.

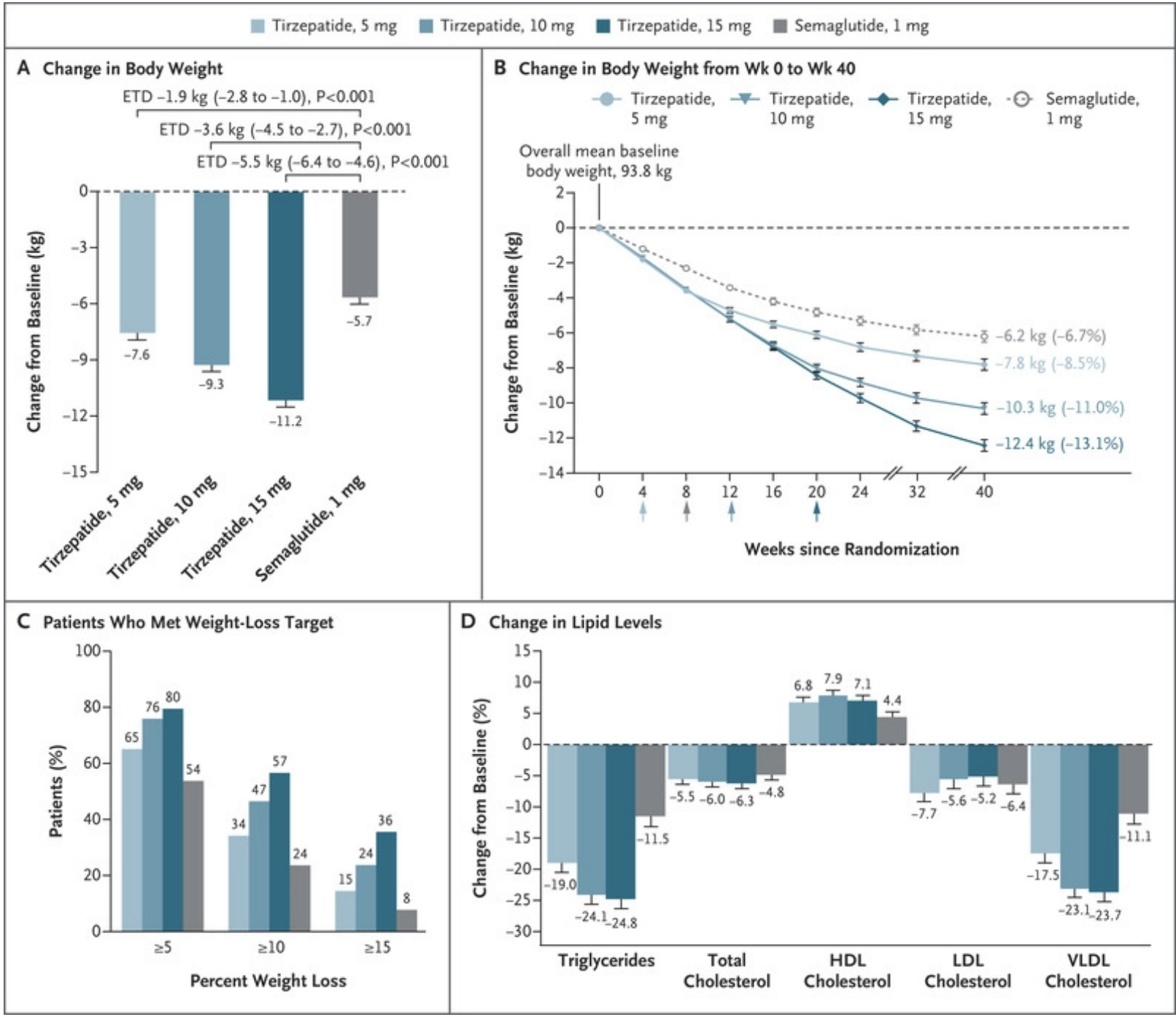
Links: Full Article | NEJM Quick Take | Editorial



CONCLUSIONS

All three doses of once-weekly subcutaneous tirzepatide led to clinically meaningful and sustained weight reduction in obese adults who did not have diabetes.

Mounjaro


Tirzepatide, 5 mg
Tirzepatide, 10 mg
Tirzepatide, 15 mg
Semaglutide, 1 mg
A Change in Body Weight
ETD −1.9 kg (−2.8 to −1.0), P<0.001
ETD −3.6 kg (−4.5 to −2.7), P<0.001
ETD −5.5 kg (−6.4 to −4.6), P<0.001
Change from Baseline (kg)
0
−3
−6
−9
−12
−15
−7.6
−9.3
−11.2
−5.7
Tirzepatide, 5 mg
Tirzepatide, 10 mg
Tirzepatide, 15 mg
Semaglutide, 1 mg
B Change in Body Weight from Wk 0 to Wk 40
Tirzepatide, 5 mg
Tirzepatide, 10 mg
Tirzepatide, 15 mg
Semaglutide, 1 mg
Overall mean baseline body weight, 93.8 kg
Change from Baseline (kg)
2
0
−2
−4
−6
−8
−10
−12
−14
−6.2 kg (−6.7%)
−7.8 kg (−8.5%)
−10.3 kg (−11.0%)
−12.4 kg (−13.1%)
0
4
8
12
16
20
24
32
40
Weeks since Randomization
C Patients Who Met Weight-Loss Target
Patients (%)
100
80
60
40
20
0
65
76
80
54
34
47
57
24
15
24
36
8
≥5
≥10
≥15
Percent Weight Loss
D Change in Lipid Levels
Change from Baseline (%)
15
10
5
0
−5
−10
−15
−20
−25
−30
−19.0
−24.1
−24.8
−11.5
−5.5
−6.0
−6.3
−4.8
6.8
7.9
7.1
4.4
−7.7
−5.6
−5.2
−6.4
−17.5
−23.1
−23.7
−11.1
Triglycerides
Total Cholesterol
HDL Cholesterol
LDL Cholesterol
VLDL Cholesterol

Meds Adjunct

- FIRST: DIET, DIET, DIET! (they have to learn how to eat right first)
- Maximize short time on drugs
- Frequent physician visits
- Social support
- Phone apps: MyFitnessPal
- Diet resources
- Daily weigh ins
- Accountability

Goals of a Perfect Diet

- Cheap/Free
- Good for your health
- Easy to follow
- Doesn’t require master's degree
- Sustainable long term
- Doesn’t rely on fads or trends
- No outrageous promises
- Evidence based
- Healthy relationship with food (no good foods or bad foods)
- Not restrictive (food freedom)

What do We Tell Patients

- Eat what you have been eating for the last 20-30 years
- It just has to be a lot less than before
- Track with an app or cut your food in half and wait 20 minutes
- Don’t feel bad if you mess up
- Adjust calories over time
- Start moving – ANYTHING!
- Keep doing this for the next 2-10-20 years or more

DIET

WEIGHT X 12-14 for maintenance calories

WEIGHT X 10 for deficit

200 X 12-14 = 2400-2800 Calories

200 X 10 = 2000 Calories

0.7-1.2 grams of protein per pound

140-240 grams of protein

The rest can be any combination of carbs and fat!

Energetics of obesity and weight control: does diet composition matter?

Dale A Schoeller[1], Andrea C Buchholz

PMID: 15867892 DOI: 10.1016/j.jada.2005.02.025

Greater average weight losses (2.5 kg over 12 weeks) have been reported for low-carbohydrate diets (<90 g/day) compared with traditional low-fat (<25% of energy), hypocaloric diets, implying a 233 kcal/day greater energy deficit. It has therefore been suggested that a low-carbohydrate diet may provide a metabolic advantage (an increase in energy expenditure), resulting in a positive effect on weight loss and maintenance. However, a review of studies in which 24-hour energy expenditure was measured did not provide evidence to support a metabolic advantage of low-carbohydrate diets and showed little evidence of a metabolic advantage of high-protein (>25% of energy) diets. Nonetheless, diets high in protein, but either low or modest in carbohydrate, have resulted in greater weight losses than traditional low-fat diets. We speculate that it is the protein, and not carbohydrate, content that is important in promoting short-term weight loss and that this effect is likely due to increased satiety caused by increased dietary protein. It has been suggested that the increased satiety might help persons to be more compliant with a hypocaloric diet and achieve greater weight loss. The current evidence, combined with the need to meet all nutrient requirements, suggests that hypocaloric weight-loss diets should be moderate in carbohydrate (35% to 50% of energy), moderate in fat (25% to 35% of energy), and protein should contribute 25% to 30% of energy intake. More studies of the efficacy of weight-loss and weight-maintenance diets that address protein content are needed. In addition, controlled studies of total energy expenditure or physical activity measured under free-living conditions that directly compare high-protein diets with those containing low and moderate carbohydrate content should also be performed.

Protein being high helps with satiety and is likely what causes more weight loss on higher protein diets.

Calories Out

- Very difficult to change this
- Don’t eat back calories that you burn off
- Calories and exercise should be independent
- We really don’t know how much we are burning off and it is usually capped

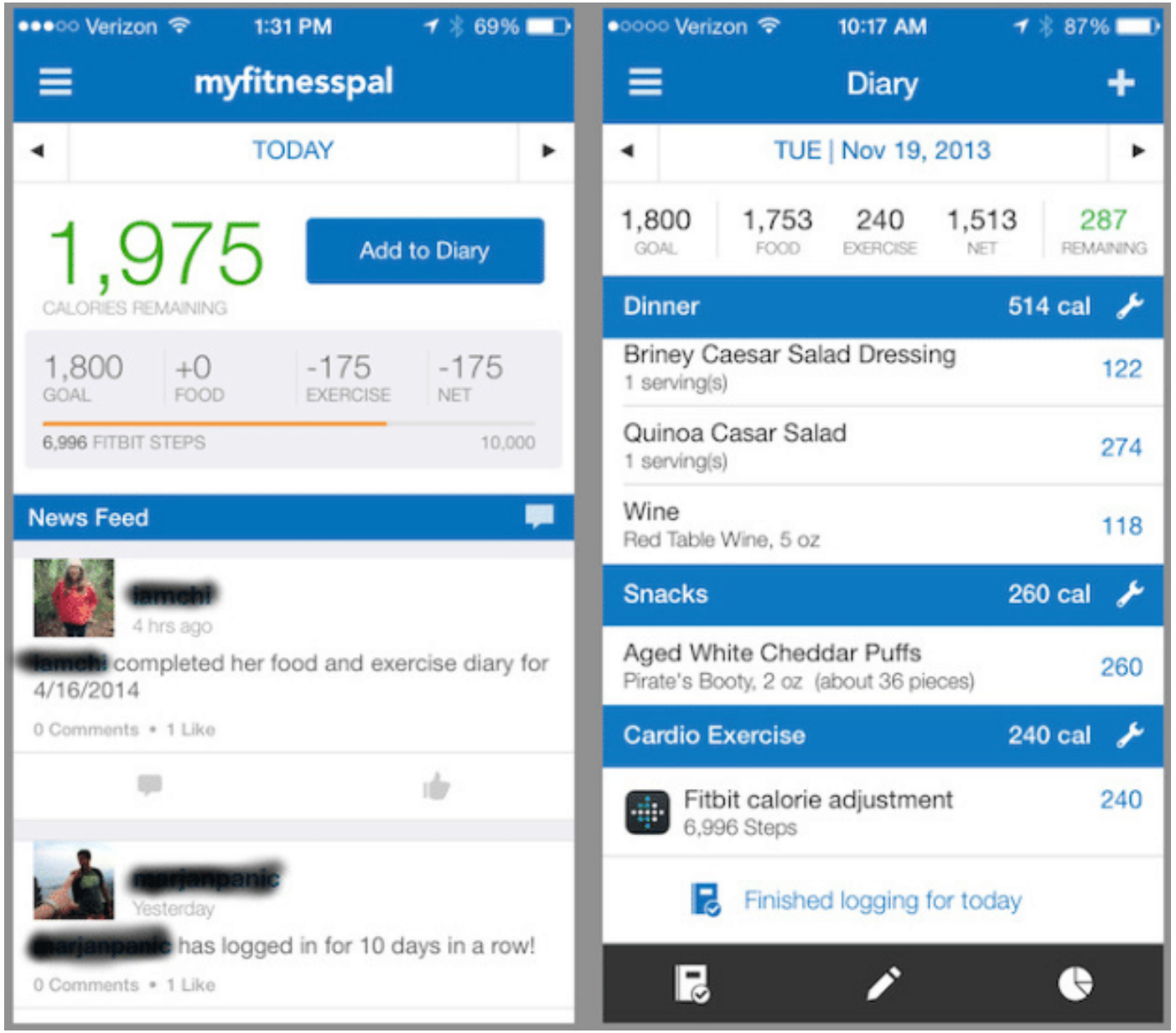
Body Recomposition

Can gain Muscle and Lose fat at the same time in a calorie deficit

- Obese
- New to training
- Deconditioned Lifters
- Anabolic steroids

MyFitnessPal

- Set up account
- Input data (age, sex, weight, height)
- Don’t connect fitness tracker
- Adjust calories to your goal
- Set 40/40/20 (protein, carbs, fat)
- Start tracking for 4 weeks
- Weigh daily
- Adjust up or down


Verizon 1:31 PM 69%
myfitnesspal
TODAY
1,975
CALORIES REMAINING
Add to Diary
1,800 GOAL
+0 FOOD
-175 EXERCISE
-175 NET
6,996 FITBIT STEPS
10,000
News Feed
4 hrs ago
completed her food and exercise diary for 4/16/2014
0 Comments • 1 Like
Yesterday
has logged in for 10 days in a row!
0 Comments • 1 Like
Verizon 10:17 AM 87%
Diary
TUE | Nov 19, 2013
1,800 GOAL
1,753 FOOD
240 EXERCISE
1,513 NET
287 REMAINING
Dinner 514 cal
Briney Caesar Salad Dressing
1 serving(s) 122
Quinoa Casar Salad
1 serving(s) 274
Wine
Red Table Wine, 5 oz 118
Snacks 260 cal
Aged White Cheddar Puffs
Pirate's Booty, 2 oz (about 36 pieces) 260
Cardio Exercise 240 cal
Fitbit calorie adjustment
6,996 Steps 240
Finished logging for today

Not losing?

Diet after the Diet

New maintenance calories are lower
Lower BMR
Reverse diet (slowly increase calories over time to increase BMR and minimize fat gain)

https://pubmed.ncbi.nlm.nih.gov/21677272-biologys-response-to-dieting-the-impetus-for-weight-regain/?from_single_result=21677272
https://pubmed.ncbi.nlm.nih.gov/15388619-the-runaway-weight-gain-train-too-many-accelerators-not-enough-brakes/?from_single_result=329%2F7468%2F736

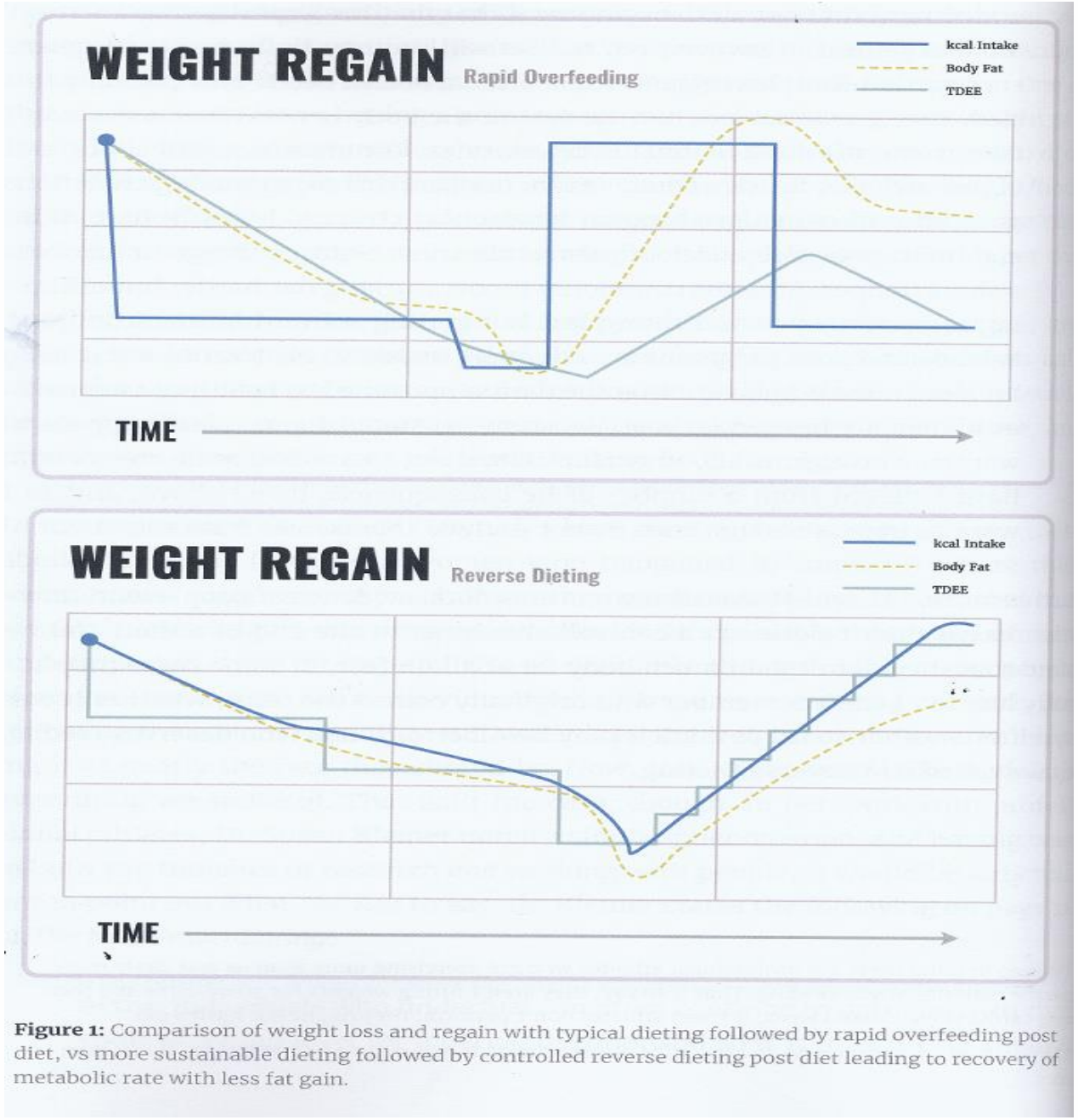


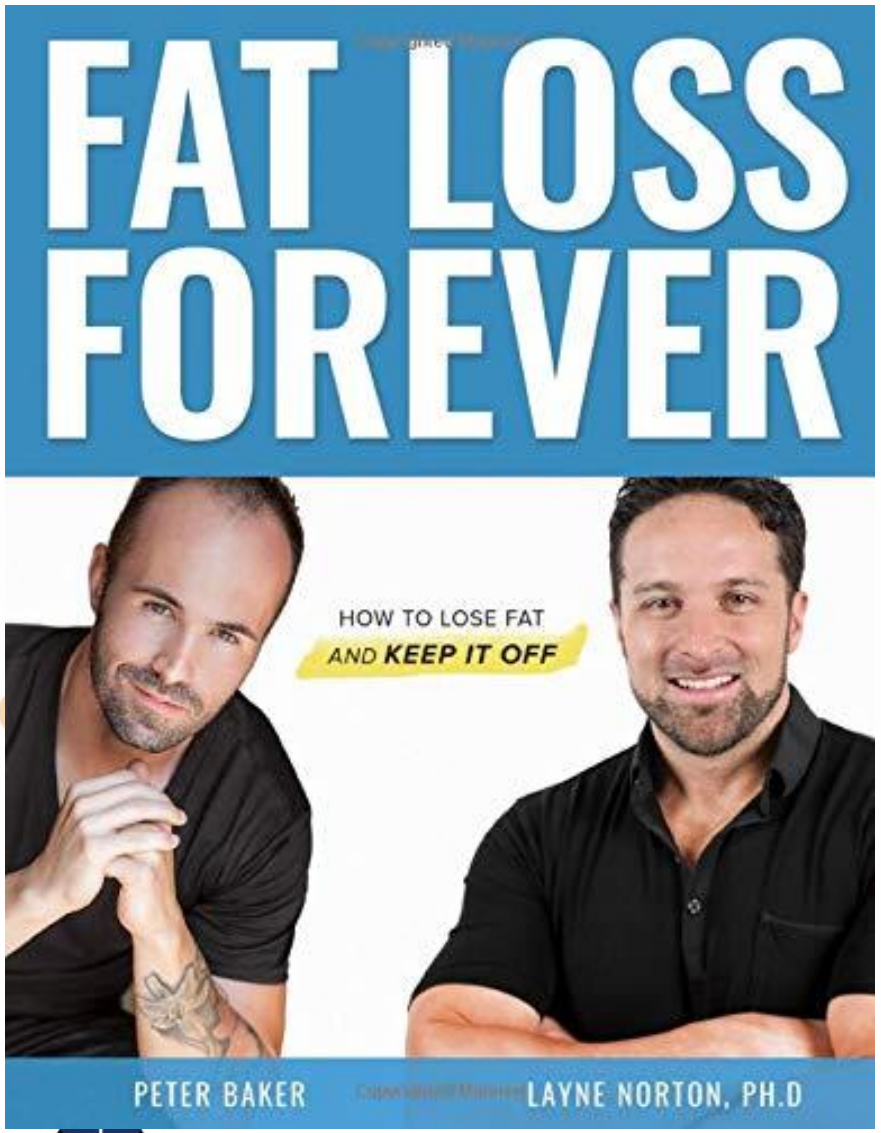
Figure 1: Comparison of weight loss and regain with typical dieting followed by rapid overfeeding post diet, vs more sustainable dieting followed by controlled reverse dieting post diet leading to recovery of metabolic rate with less fat gain.

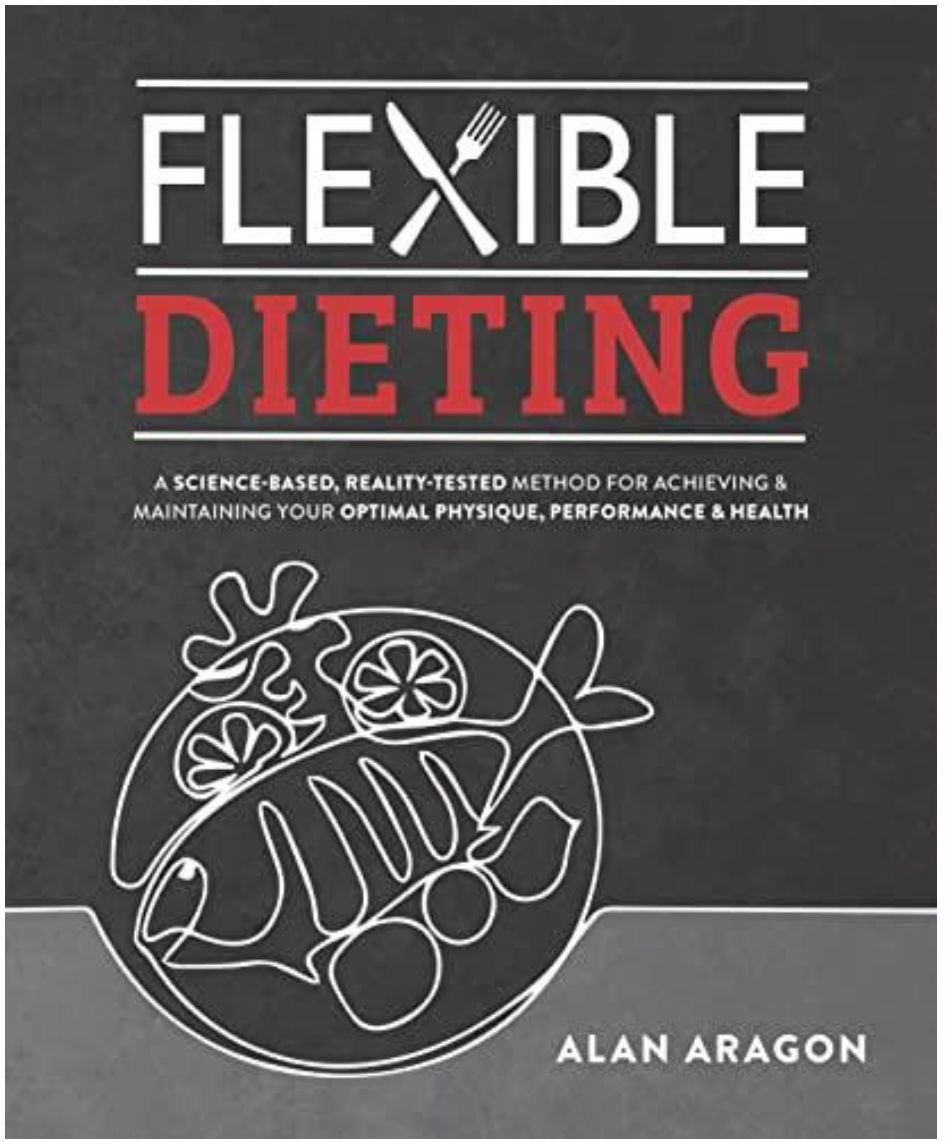
Resources

Macros Inc Calculator

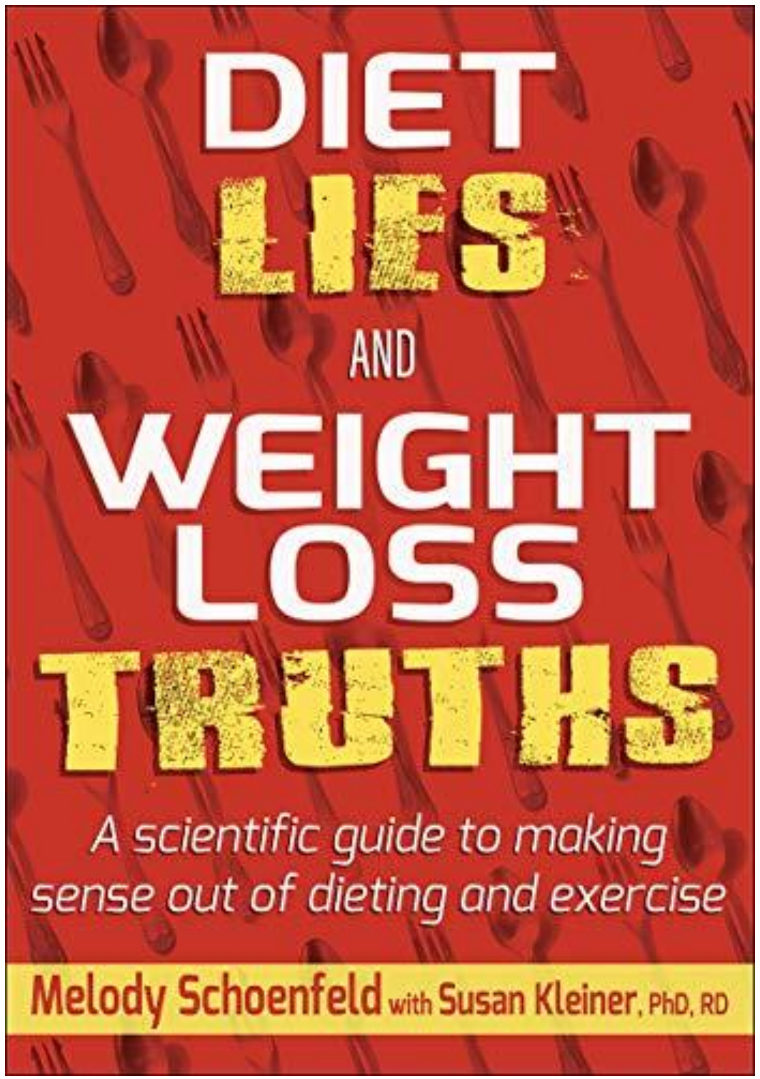
https://macrosinc.net/macro-calculator/

Macros Inc Facebook Page
Great resource of very helpful and supportive people


FAT LOSS FOREVER
HOW TO LOSE FAT
AND KEEP IT OFF
PETER BAKER
LAYNE NORTON, PH.D

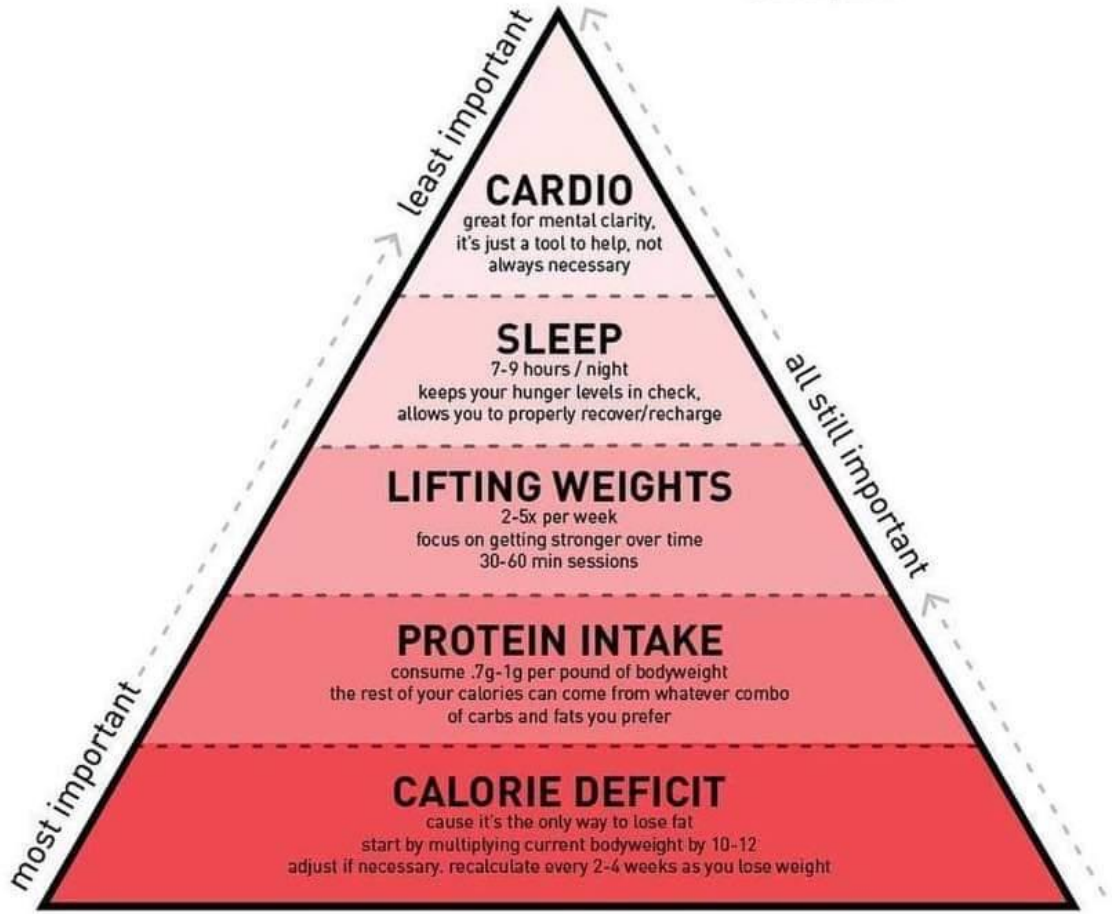

FLEXIBLE DIETING
A SCIENCE-BASED, REALITY-TESTED METHOD FOR ACHIEVING & MAINTAINING YOUR OPTIMAL PHYSIQUE, PERFORMANCE & HEALTH
ALAN ARAGON

Melody Schoenfeld and Susan Kleiner



GOLDEN PYRAMID OF FAT LOSS

@saltylifts



Fat Loss Fundamentals

@bdccarpenter

Non-Negotiable

A calorie deficit

Highly Advisable

Making your plan as easy to stick to as possible
Consuming adequate protein
Resistance training
Keeping an active lifestyle
Prioritising nutritious food
Adequate sleep

Shit Most People Don't Need To Worry About

What the "best" diet is
How many meals you eat
Your carb to fat ratio
Calorie cycling
Whether your cardio is fasted or not
What time of the day you eat
What you consume after your workout
What time you train

Stuff people focus on the most

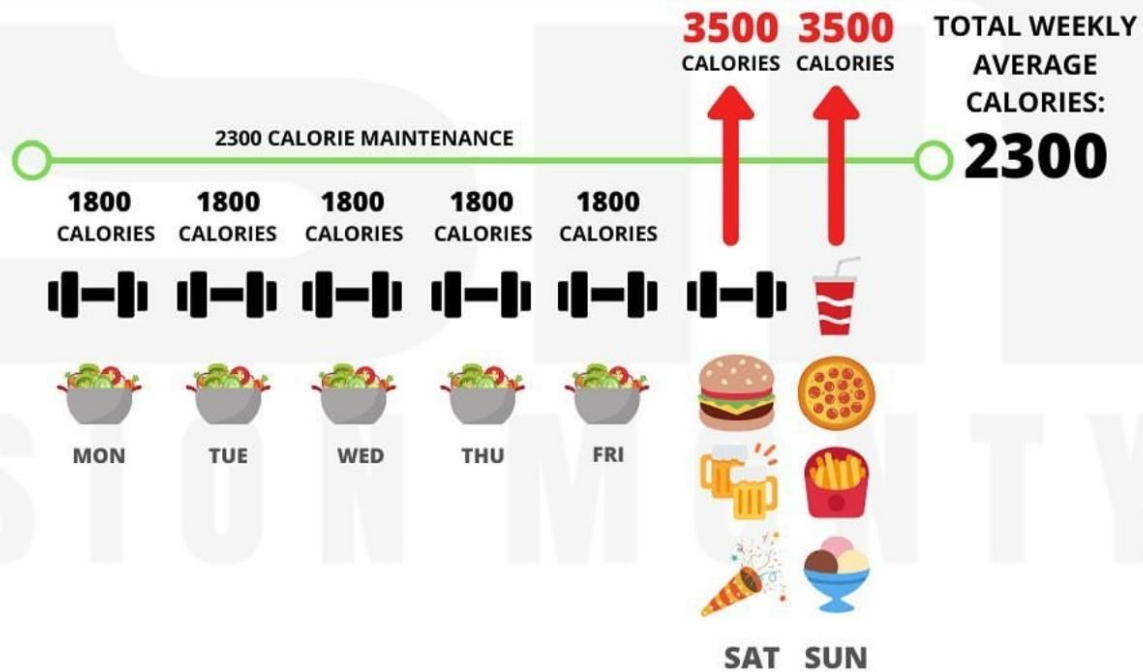
Shit That Can Just Fuck Off

Unnecessary food avoidance
"Cheat meals"
Juice cleanses
Weight loss teabags
Self proclaimed quick fixes
False promises

HOW TO DESTROY

FOLLOW @SIONMONTY

YOUR DIET



DONT ALLOW THE WEEKEND TO GET THE BETTER OF YOU!

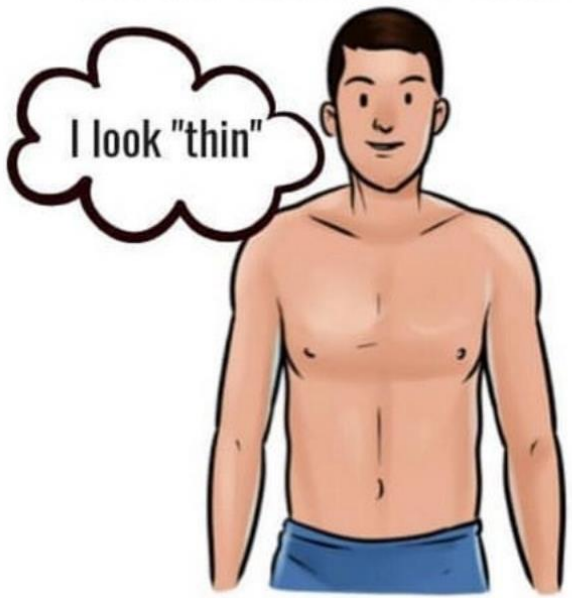
SION MONTY

DEFICIT ,BALANCE, MODERATION, CONSISTENCY

SION MONTY

THE KEY TO LOSING FAT IS LIFTING WEIGHTS!

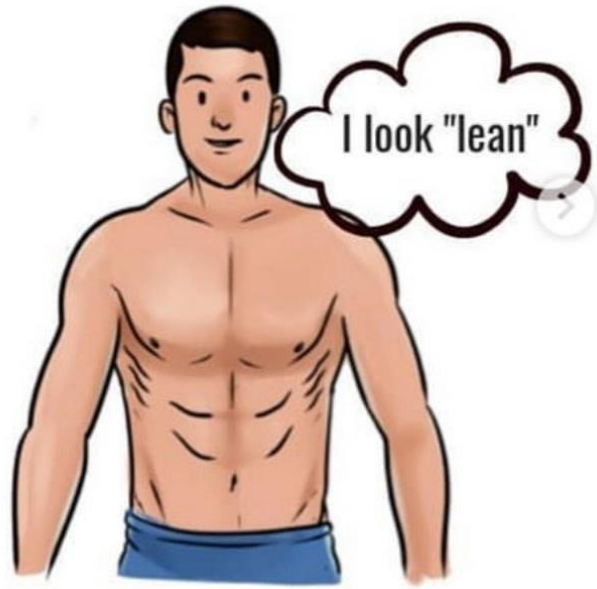
DIET/CARDIO ONLY



BODY FAT LEVELS: ↓

MUSCLE MASS: ↓

DIET & WEIGHTS



BODY FAT LEVELS: ↓

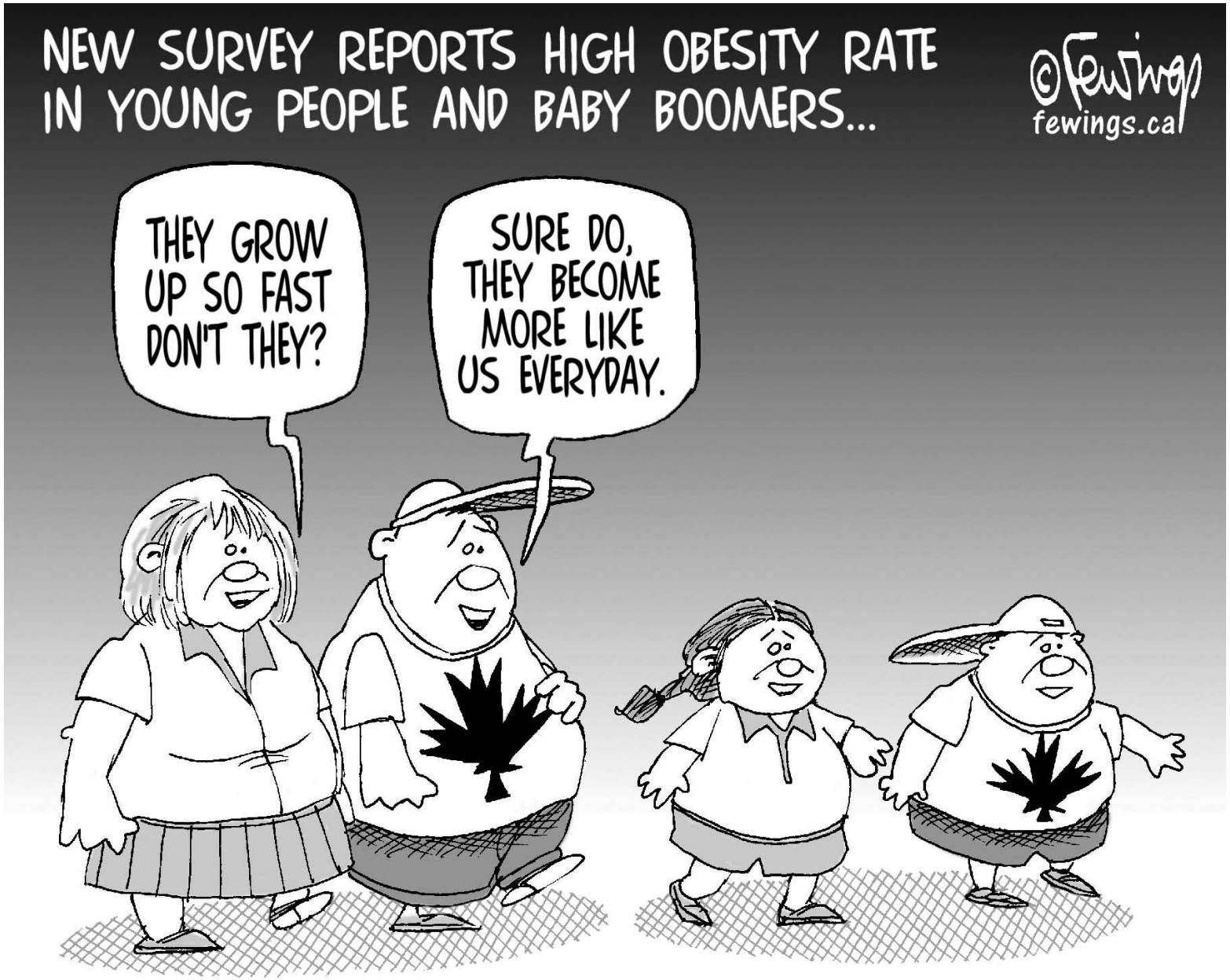
MUSCLE MASS: ↑–

rpstrength

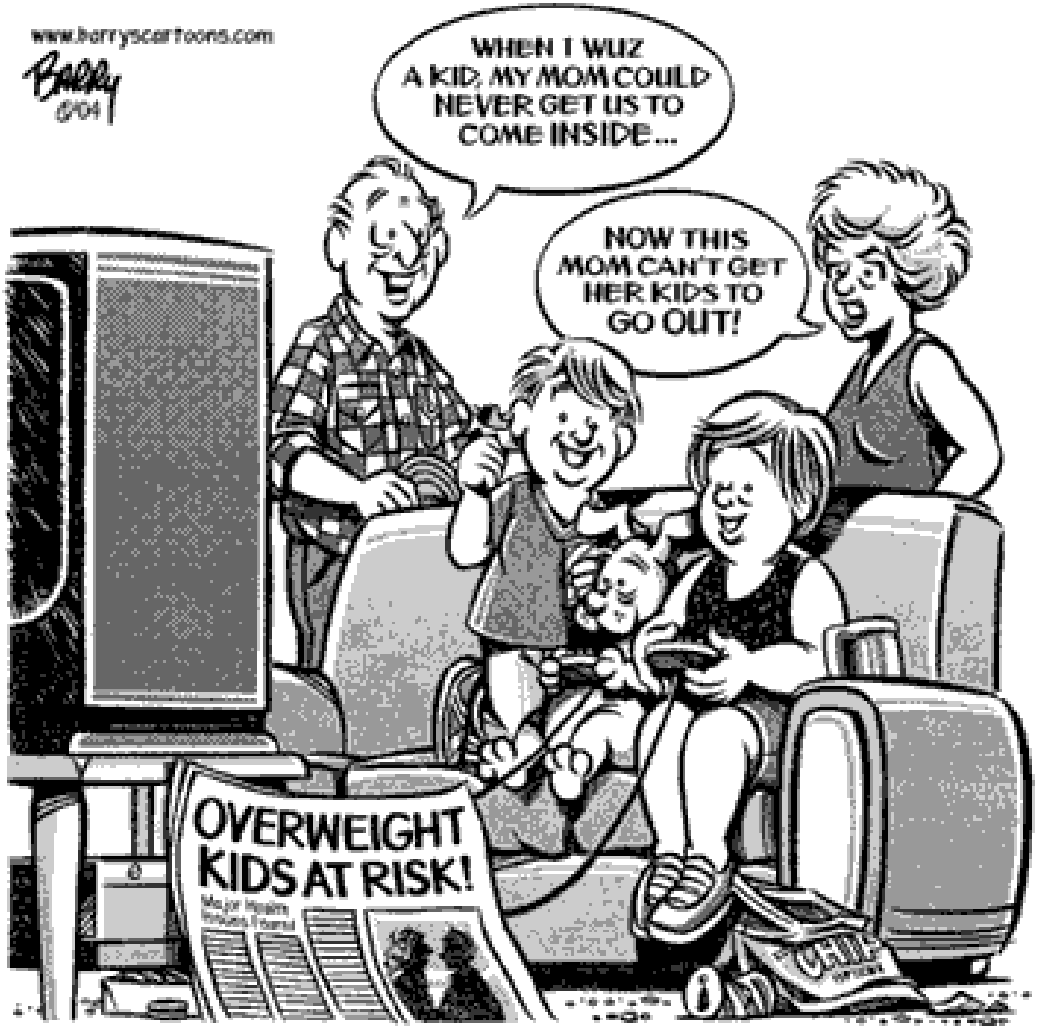
LOSING WEIGHT VS. LOSING FAT

@CARTERGOOD

SO CHILL. FOCUS ON FAT LOSS.


NEW SURVEY REPORTS HIGH OBESITY RATE IN YOUNG PEOPLE AND BABY BOOMERS...
©Fewings
fewings.ca
THEY GROW UP SO FAST DON'T THEY?
SURE DO, THEY BECOME MORE LIKE US EVERYDAY.

Why fat kids?


www.barryscartoons.com
WHEN I WUZ A KID, MY MOM COULD NEVER GET US TO COME INSIDE...
NOW THIS MOM CAN'T GET HER KIDS TO GO OUT!
OVERWEIGHT KIDS AT RISK!

Appendix

Articles demonstrating that weight loss depends on energy balance only (calories) and that macronutrient composition does not matter at all.

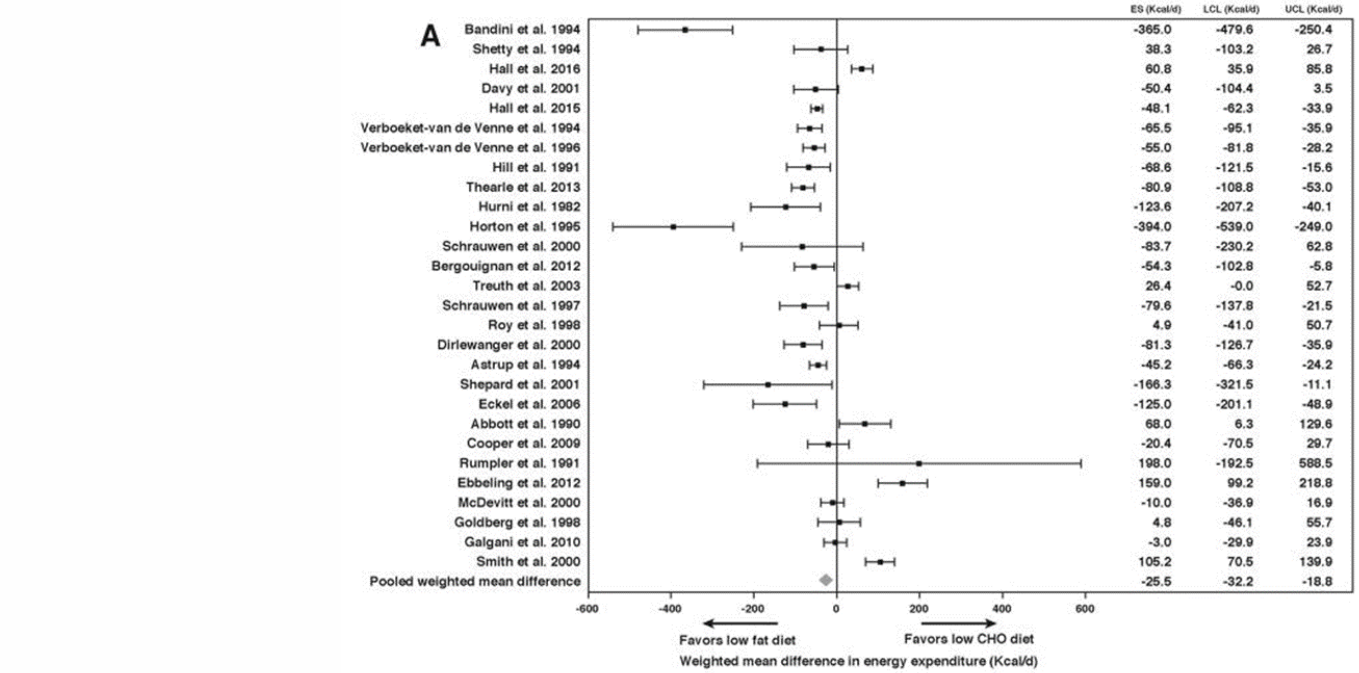
Obesity Energetics: Body Weight Regulation and the Effects of Diet Composition

https://pubmed.ncbi.nlm.nih.gov/28193517/

Low Fat was actually superior to low carb. Take a look at the graph from this study.

LF vs LC

- Nearly every study ever done favors low fat



Article demonstrating that proteins and fats have a greater thermic effect of food than fat:

The Thermic Effect of Food: A Review

https://pubmed.ncbi.nlm.nih.gov/31021710/

Articles demonstrating that while sugar intake has decreased over the years, obesity continues to rise:

Worldwide trends in dietary sugars intake

https://pubmed.ncbi.nlm.nih.gov/25623085/

Trends in dietary carbohydrate consumption from 1991 to 2008 in the Framingham Heart Study Offspring Cohort

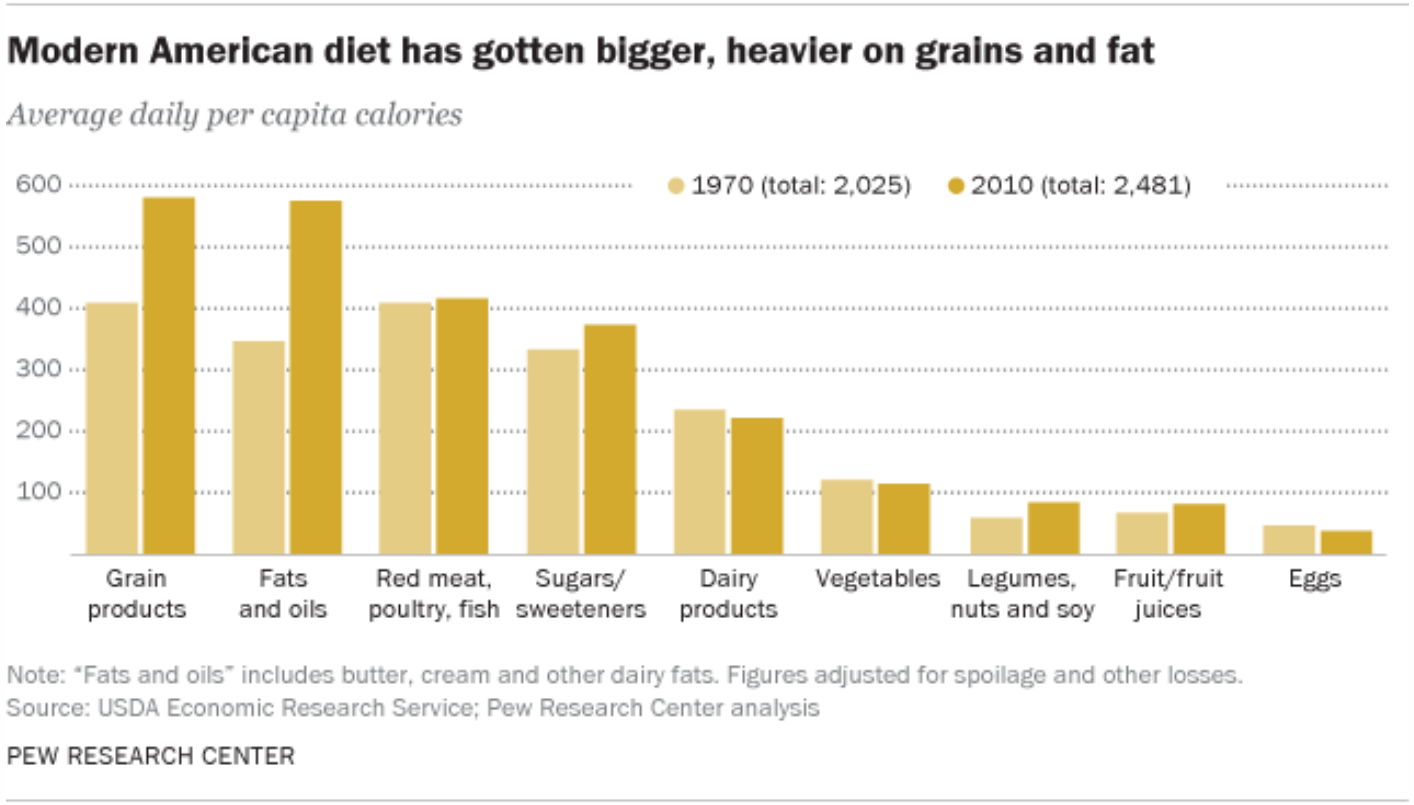
https://pubmed.ncbi.nlm.nih.gov/24661608/

Trends in sugar-sweetened beverage consumption among youth and adults in the United States: 1999-2010

https://pubmed.ncbi.nlm.nih.gov/23676424/

Articles demonstrating that the biggest contributor to the increase in caloric intake over the years has been fat, not sugar. Along with the graph showing the composition of diets from 1970 compared to 2010.

What's on your table? How America's diet has changed over the decades
https://www.pewresearch.org/fact-tank/2016/12/13/whats-on-your-table-how-americas-diet-has-changed-over-the-decades/



Articles demonstrating that differences in glycemic load do not affect weight loss or gain when calories are equated.

Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion: The DIETFITS Randomized Clinical Trial

https://pubmed.ncbi.nlm.nih.gov/29466592/

No difference in body weight decrease between a low-glycemic-index and a high-glycemic-index diet but reduced LDL cholesterol after 10-wk ad libitum intake of the low-glycemic-index diet

https://pubmed.ncbi.nlm.nih.gov/15277154/

Metabolic and behavioral effects of a high-sucrose diet during weight loss

https://pubmed.ncbi.nlm.nih.gov/9094871/

Randomized controlled trial of changes in dietary carbohydrate/fat ratio and simple vs complex carbohydrates on body weight and blood lipids: the CARMEN study. The Carbohydrate Ratio Management in European National diets

https://pubmed.ncbi.nlm.nih.gov/11093293/

Metabolic and behavioral effects of a high-sucrose diet during weight loss

https://pubmed.ncbi.nlm.nih.gov/9094871/

The effects of four hypocaloric diets containing different levels of sucrose or high fructose corn syrup on weight loss and related parameters

https://pubmed.ncbi.nlm.nih.gov/22866961/

Articles showing that sugar does not cause fat gain unless also accompanied by an increase in calories.

Dietary sugars and body weight: systematic review and meta-analyses of randomised controlled trials and cohort studies

https://pubmed.ncbi.nlm.nih.gov/23321486/

Articles demonstrating that low carb diets do not cause more weight loss than low fat/high carb diets when calories and protein are equated.

Ketogenic low-carbohydrate diets have no metabolic advantage over nonketogenic low-carbohydrate diets

https://pubmed.ncbi.nlm.nih.gov/16685046/

Energy expenditure and body composition changes after an isocaloric ketogenic diet in overweight and obese men

https://pubmed.ncbi.nlm.nih.gov/27385608/

Low carbohydrate versus isoenergetic balanced diets for reducing weight and cardiovascular risk: a systematic review and meta-analysis

https://pubmed.ncbi.nlm.nih.gov/25007189/

Articles demonstrating that insulin levels do not predict weight gain.

The entero-insular axis and adipose tissue-related factors in the prediction of weight gain in humans

https://pubmed.ncbi.nlm.nih.gov/17130851/

Articles showing that overfeeding carbohydrates or fats are both equally fattening in humans.

Fat and carbohydrate overfeeding in humans: different effects on energy storage

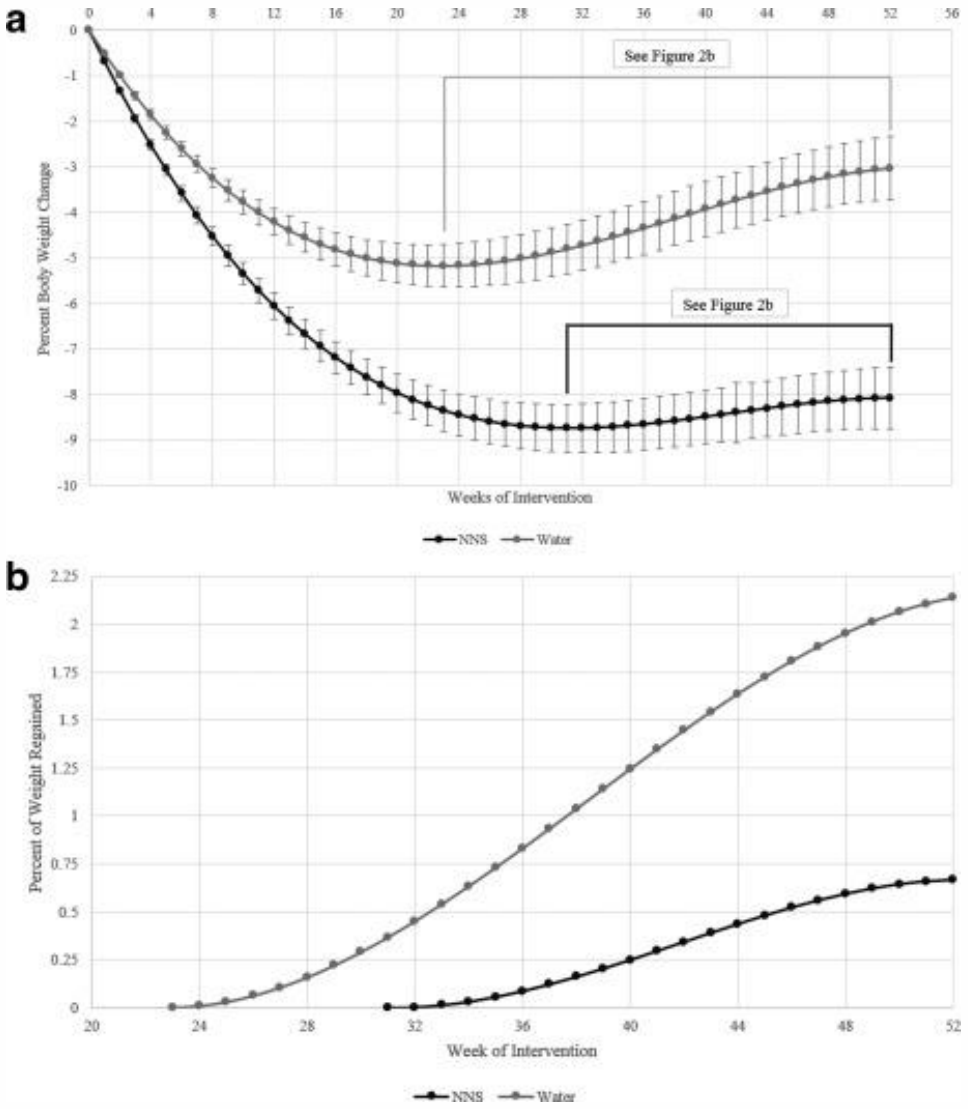
https://pubmed.ncbi.nlm.nih.gov/7598063/

Effects of isoenergetic overfeeding of either carbohydrate or fat in young men

https://pubmed.ncbi.nlm.nih.gov/11029975/

Article showing that NNS (non nutritive sweeteners), zero calorie sweeteners, caused more weight loss than when compared to water. Very well done study.

https://pubmed.ncbi.nlm.nih.gov/26708700/



The NNS group lost more weight and kept almost all of it off.

Thank you!

Connect With Me!

https://youtube.com/MohammedAlo

https://Facebook.com/DrAloOfficial

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